

13.21 R11

a Self-Instructional Course

# EFFECTIVE RADIO USE



designed for Personnel of the  
**FOREST SERVICE**  
U.S. DEPARTMENT OF AGRICULTURE



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a Self-Instructional Course

# **EFFECTIVE RADIO USE**



**designed for Personnel of the  
FOREST SERVICE**  
U.S. DEPARTMENT OF AGRICULTURE

NOTE TO TRAINEE -- This is your book. Keep it and refer to it as needed.

---

Your Name

## A PERSONAL MESSAGE TO EACH FOREST SERVICE RADIO USER

In today's modern Forest Service work program, radio is an essential communications tool. In this sense, radio, like a pen or pencil, is truly multi-functional. We use radios for resource management, engineering, fire control, research, and many other activities -- nearly all Forest Service programs use radios at one time or another.

We must become more proficient in our use of radios as our workload increases. The old ways are no longer good enough. Clearer, briefer messages are the key to more effective and professional radio use. Using a powerful programmed self-instruction method, this text presents a standardized pattern of radio procedure for use throughout the Forest Service. Most people will complete this course in 15-30 hours.

Old hands and newcomers, field men and office people -- anyone who uses a Forest Service radio -- should improve his radio procedures by completing this course. Having done this, you will get more communicated in less time, enabling the Forest Service to obtain maximum benefit from its radio equipment.



Issued June 1969

EDWARD P. CLIFF, Chief  
U. S. Forest Service



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## *Introduction*

This is a self-instructional basic course designed specifically to teach the use of two-way F.M. radios to Forest Service personnel. Description of radio equipment is for typical radios used by the Forest Service. Many systems differ from the typical repeater systems described in this course. Your work supervisor will explain your local system and its equipment.

You will *not* have an instructor and you may progress through the course at your own best speed. The estimated total time required to complete this course is 15 to 30 hours.

It is very important that you follow all directions exactly. Be sure to write in this Manual when this is indicated and carry out all procedures as directed by the Manual. As you proceed you will be directed to check your work by the Answer Pages. These are on pages 153 to 178 in this Manual. When you are so directed by the Manual, *check and correct* any mistakes before you go on.

During this course you will learn to identify, operate, and communicate effectively via the F.M. (Frequency Modulation) radios used by the Forest Service.

When you have a *pencil* and an *eraser*, turn the page and begin the Pre-Test.



## PRE-TEST

Before you begin the main part of the course, test yourself by answering the following questions. Do NOT look at the Answer Pages.

- Use your pencil to mark the letter, A, B, C, or D, beside the *best* answer. Mark only *one* answer for each item.

For example, B is the correct choice below -

1. This course is designed to teach you how to use:
  - A. Fire extinguishers
  - ☒ B. Two-way F.M. radios
  - C. Morse Code equipment
  - D. Chopsticks

Don't spend too much time trying to guess. Just skip those which you don't know. It is not assumed that you will know *any* of the answers before you take the course.

1. Forest Service radios, as used by personnel in the field, *transmit* on:
  - A. Channel 1 only
  - B. Channel 2 only
  - C. Channels 1 and 2
  - D. Any channel
2. Forest Service radios, as used by personnel in the field, *receive*:
  - A. Channel 1 only
  - B. Channel 2 only
  - C. Channels 1 and 2
  - D. Any channel
3. This is the correct way to hold the radio mike when transmitting:
  - A. As close to your mouth as possible
  - B. At an angle to your mouth, 1 to 2 inches away
  - C. Straight in front of your mouth, 2 to 3 inches away
  - D. Just below your chin, about 1 inch away, tilted up to your mouth



4. Which is the most important in terms of priority for radio use?
- A. Dispatching the first crew to a fire
  - B. Requesting additional men and equipment for a fire
  - C. First report of a new fire
  - D. Injury or need for medical attention
5. When you are receiving a message, how can you tell when the sender is through talking, or ready for you to answer?
- A. The sender should say "over" or "clear".
  - B. The sender should give the call letters of the radio net.
  - C. You will hear (what can best be described as) a "chuh" sound.
  - D. You will hear a click as he releases his push-to-talk button.
6. How can you tell (by listening) when a message is coming through a repeater?
- A. You will hear two clicking sounds.
  - B. You will hear two "chuh" sounds.
  - C. The sender will give the 10-code signal meaning "repeater on".
  - D. You will hear a slight "echo" effect.
7. To prepare most *mobile* radio units for operation, the first thing to do is:
- A. Raise the antenna.
  - B. Attach the antenna.
  - C. Remove the mike.
  - D. Turn on the ignition.
8. When a single radio transmission lasts more than 30 seconds, you should:
- A. Stop transmitting every 30 seconds, say "Break", wait for acknowledgment of reception, then wait ten seconds before continuing.
  - B. Stop transmitting every 15 seconds, say "Break", and wait five seconds before continuing.
  - C. Say "10-2?" every 30 seconds, and wait for a reply.
  - D. Stop transmitting every 10 seconds, and wait for acknowledgment from the receiver before continuing.



9. "Six o'clock in the afternoon" should be said on the radio as:
- A. "Six PM"
  - B. "Oh-six hundred"
  - C. "Eighteen hundred"
  - D. "One-eight-oh-oh"
10. The 10-code signal, 10-1, means:
- A. OK or acknowledgment
  - B. Stop transmitting, or, I am going to pause
  - C. In service
  - D. Receiving poorly, or, can't hear well
11. The 10-code signal, 10-33, means:
- A. Emergency traffic at this station
  - B. Report progress on fire
  - C. Routine check in
  - D. Stand by
12. The 10-code signal, 10-71, means:
- A. Receiving poorly
  - B. Advise nature of fire
  - C. Report progress on fire
  - D. Transmitting too rapidly
13. The 10-code signal, 10-25, means:
- A. Do you have contact with \_\_\_\_\_ ?
  - B. Can \_\_\_\_\_ come to the radio?
  - C. What is your location?
  - D. Is \_\_\_\_\_ available for phone call?
14. A correct radio transmission of the phrase, "1000 trees", is:
- A. "One-zero-zero-zero trees"
  - B. "One thousand trees"
  - C. "Ten hundred trees"
  - D. All of the above are acceptable in radio transmission.

15. A correct radio transmission of the phrase, "243 cows", is:
- A. "Two hundred and forty three cows"
  - B. "Two hundred and four-three cows"
  - C. "Two-four-three cows"
  - D. "Two-forty three cows"
16. When first reporting a new fire, a radio message should include:
- A. "Mayday!"
  - B. "Fire flash"
  - C. "Clear for fire"
  - D. "Attention - all units - fire!"
17. Which of these radio messages is an example of the best request for weather and time information?
- A. "Ten-thirteen, please, and time"
  - B. "Ten-two, ten-eight"
  - C. "Ten-thirteen, ten-thirty six"
  - D. "Ten-thirteen, then, thirty six, please"
18. Mark the transmission below which best conveys this message, "I am returning to my station and will be out of service at home, subject to telephone call, at 9 o'clock tonight."
- A. "Returning to station, ten-ten, nine."
  - B. "Ten-ten at twenty one hundred."
  - C. "Ten-nineteen, twenty one hundred."
  - D. "Ten-nineteen, ten-ten at twenty one hundred."
19. Mark the transmission below which best conveys this message, "Can Jones be reached by telephone?"
- A. "Ten-forty Jones?"
  - B. "Ten-thirty nine Jones?"
  - C. "Advise if Jones is available for phone call."
  - D. "Ten-twenty Jones, please."




20. Mark the *most professional* radio message below:
- A. "Please tell the recreation staff man that Jones Creek Camp Ground has forty three full units, seventeen empty at this time."
  - B. "Advise the recreation staff man that Jones Creek Camp Ground has zero-four-three full units, zero-one-seven empty at this time."
  - C. "Ten-eight, Jones Creek Camp Ground, four-three full, one-seven empty. Ten-four."
  - D. "Advise the recreation staff man that Jones Creek Camp Ground has oh-four-three full units, oh-one-seven empty at this time. Acknowledge and over."
21. Car 43 is calling the Dispatcher for a routine check in. What might the man in Car 43 *best* say?
- A. "Car forty three calling Control. Ten-eighty six."
  - B. "Control, Car forty three – any messages?"
  - C. "Calling Control - this is Car four-three. Routine check."
  - D. "Control, Car four-three, ten-eighty six."
22. The Ranger at Red Rock Ranger Station has received and understood a message from the Dispatcher. He could best sign off in this way:
- A. "Ten-four, Red Rock."
  - B. "Ten-four, Red Rock. Over and out."
  - C. "Roger - over and out."
  - D. "Red Rock signing off."
23. The Dispatcher (Control) wants the Lookout at Rocky Peak to turn on the repeater. Which transmission best conveys the request?
- A. "Control calling Rocky Peak. Activate repeater."
  - B. "Rocky Peak, Control. Ten-forty three."
  - C. "Rocky Peak, ten-forty three, Control."
  - D. "Control calling Rocky Peak. Ten-four-three."

24. A Ranger is ordering part no. 1470 for a new machine. That order could best be transmitted as:
- A. "Please deliver part number one-four-seven-zero."
  - B. "Request immediate attention to order of part number one-four-seven-zero."
  - C. "Send part number one-four-seven-zero."
  - D. "Please send part number fourteen hundred, seventy. Thanks."
25. One group of words below is representative of professional Forest Service radio word use. Which?
- A. "Roger", "Over", "All clear"
  - B. "A - OK", "Green", "All go"
  - C. "Flash", "Sign off", "Unit break"
  - D. "Affirmative", "Negative", "Break"



DO NOT TRY TO SCORE YOUR TEST NOW. After you have finished the course, you will be given the correct answers.

It is suggested that you proceed through the course in two to four hour sessions. "Break Points" will be designated throughout. When you stop for the day, you should stop at one of those "Break Points", if possible.

Begin now 

## MANUAL PORTION

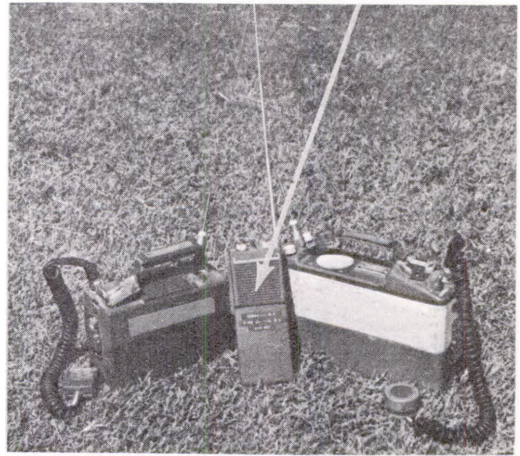
Examples of the major types of Forest Service radio units are shown below.

MOBILE UNIT



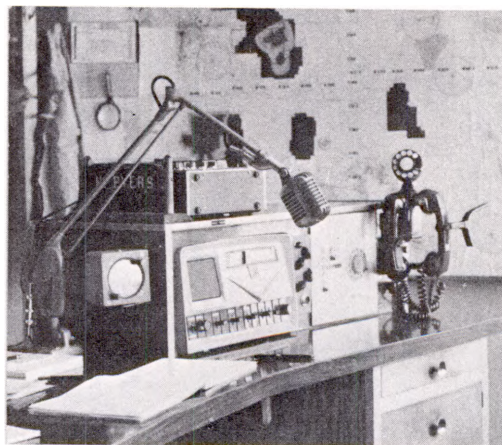
PORTABLE RADIOS

Personal Portable



Units on auto**MOBILES**  
are called  
Mobile Units

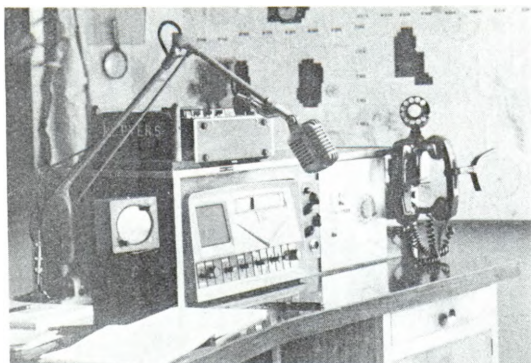
BASE STATION RADIO



This is a base station radio.  
It stays in *one place*, at the  
base station.



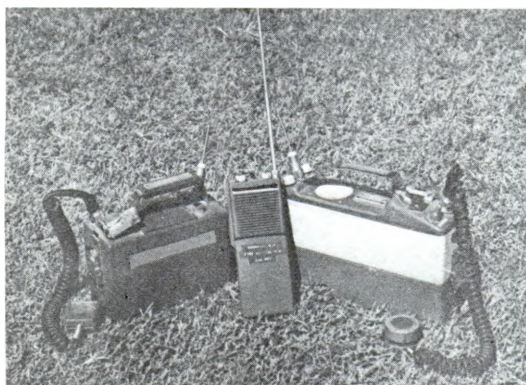
Now *you* label the radio units by filling in the blanks below:



1. This is a \_\_\_\_\_ radio.



2. This is a \_\_\_\_\_ unit.



3. These three are  
\_\_\_\_\_ radios.

Turn to the Answer Pages beginning on page 153 and check the answers.  
If you made a mistake, read page 9 again. Then erase and correct your error.

The next section contains information about transmitting channels, radio reception, radio links and nets, and the use of repeaters.

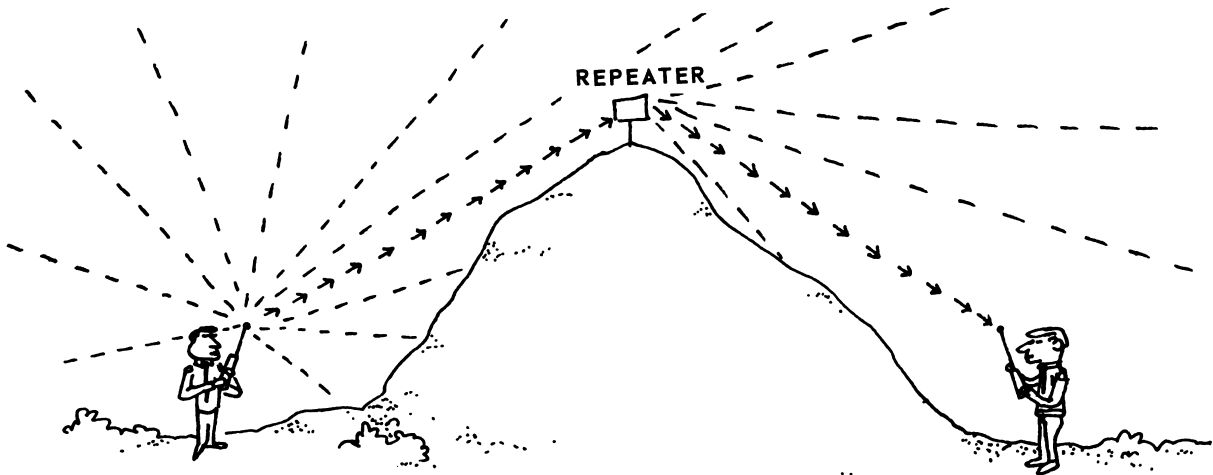
- If you think you **ALREADY KNOW** this material, test yourself by answering the questions below.
- If you **DON'T** know all this material, skip the questions and **GO DIRECTLY TO PAGE 12**.

1. How many transmitter channels does each radio have? \_\_\_\_\_
2. Each radio transmits on channel(s) \_\_\_\_\_.
3. Each radio *receives* channel (s) \_\_\_\_\_.
4. The repeater *receives* channel(s) \_\_\_\_\_.
5. The repeater retransmits on channel (s) \_\_\_\_\_.
6. When you are receiving a message *directly* from another radio, how do you know when the sender is through talking and ready for you to answer? \_\_\_\_\_
7. How can you tell that a message is being received through a repeater?  
\_\_\_\_\_
8. When you *receive* a message which has been relayed by a repeater, you answer on channel \_\_\_\_\_.
9. When you receive a message *directly* from another radio, you answer on channel \_\_\_\_\_.
10. To *receive* messages, your transmit channel selector may be *turned* to \_\_\_\_\_  
or \_\_\_\_\_.
11. When should you say "over" or "clear" at the end of a transmission?  
\_\_\_\_\_
12. What produces the "chuh" sound?  
\_\_\_\_\_
13. Which radios can you communicate with? \_\_\_\_\_  
\_\_\_\_\_
14. When you know a message is coming through a repeater, when should your answering transmission begin? \_\_\_\_\_

**IMPORTANT** - Check your answers by the Answer Pages. If you missed *any* questions, **GO ON TO PAGE 12**. If you did *not* miss *any*, you may **SKIP OVER TO PAGE 19 NOW**.



Forest Service radios usually provide “line of sight” transmission. That is, they transmit on a straight line but cannot “bend” over hills or mountains, or go through them. When it is necessary to talk to someone on the other side of a mountain, a *repeater* is often used. Your transmission goes “straight” to the repeater and then “straight” from the repeater to the person you are calling. See the diagram below. The repeater may be automatic, or you may need to call the lookout on the mountain and ask him to turn on the repeater. You would ask him to turn off the repeater at the end of the transmission.



The radio waves go in all directions, of course, but cannot go through the mountain.

Some installations make use of a radio *link*, which has the *effect* of placing base stations on tops of hills at some remote locations. The base station when *linked* to a remote mountain top, would transmit and receive as if the base station were physically located on the remote mountain top, thereby increasing the area covered by the base station many times. Your work supervisor will explain to you the details of the radio net in your area.

Radios have TWO TRANSMIT channels, channel 1 (or A) and channel 2 (or B). Channel 2 (or B) is used only for transmissions to a repeater. The repeater relays the message on *channel 1*. These radios have only ONE RECEIVER channel. Radios *receive* channel 1 whether the radio transmit channel is turned to channel 1 or to channel 2. Direct messages are transmitted *and* received on channel 1. See the sketches below.



Write the answers to the questions below.

Refer to these sketches if you need help.



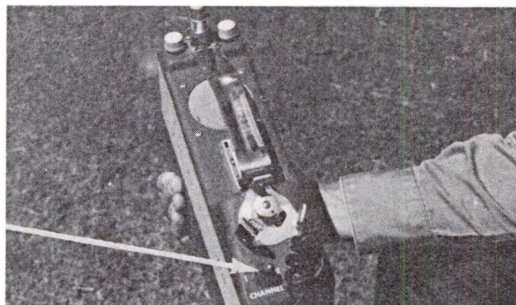
1. Forest Service radios have two transmit channels. On what two channels can these radios *transmit* messages? \_\_\_\_\_
2. Radios *transmit direct* messages on channel \_\_\_\_\_ .
3. Radios transmit messages to *repeaters* on channel \_\_\_\_\_ .
4. Repeaters *receive* channel \_\_\_\_\_ , and relay the message on channel \_\_\_\_\_ .
5. When is a repeater used? (Answer in your own words.)  
\_\_\_\_\_
6. To *transmit* a message through a repeater, your radio transmit channel selector should be turned to channel \_\_\_\_\_ .
7. To transmit a message *directly* to another radio your radio transmit channel selector should be turned to channel \_\_\_\_\_ .
8. For what one purpose is channel 2 used?  
\_\_\_\_\_
9. Forest Service radios *receive* channel \_\_\_\_\_ , whether the transmit channel selector is turned to channel 1 or to channel 2.

Check by the Answer Pages. Always correct any error.

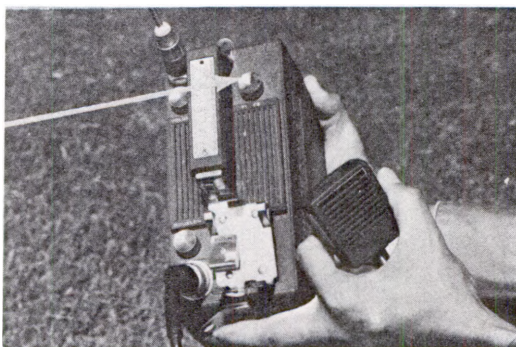


To turn your radio transmit channel selector to channel 1 or 2, you would simply turn the transmit channel selector knob, or flip the switch. These knobs or switches may be labeled 1-2, A-B, or F 1-F 2. The F stands for Frequency. See these in the pictures below.

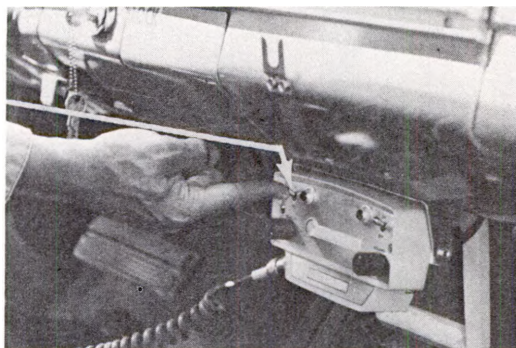
Transmit  
Channel  
Selector  
Knob on  
one type of  
portable radio



Transmit  
Channel  
Selector  
Knob on  
another type  
of  
portable radio



Transmit  
Channel  
Selector  
Switch on  
mobile unit



When you receive a message which was transmitted *directly* from another radio, you will hear (what can best be described as) a “chuh” sound at the end of the transmission. This eliminates the need for saying “over” or “clear.” When you receive a message which was relayed through a repeater, you will hear *two* “chuh” sounds - one from the radio, then one from the repeater. The “chuh” sound is *repeated* by the repeater. When you hear the “chuh” sound *repeated* you know you will have to *answer* on *channel 2*, to go through the *repeater*.

Write the answers:

1. How do you know when the person transmitting is ready for you to answer, or is through talking?  
\_\_\_\_\_
2. How can you tell whether you should transmit your answer on channel 1 or channel 2?  
\_\_\_\_\_
3. When you transmit on channel 2, is the message *received* on channel 2? \_\_\_\_\_  
(yes or no)  
If not, why not?  
\_\_\_\_\_
4. After transmitting a message on channel 2, do you need to turn the transmit channel selector back to channel 1 to *receive* an answer? \_\_\_\_\_
5. All radio messages are *received* on channel \_\_\_\_\_.
6. Can Forest Service radios *receive* messages transmitted on channel 2? \_\_\_\_\_
7. Can messages be received when your radio is turned to channel 2?  
\_\_\_\_\_
8. Repeaters receive messages on channel \_\_\_\_\_ and retransmit them on channel \_\_\_\_\_.
9. When you hear one "chuh" sound at the end of a transmission you know the message \_\_\_\_\_ retransmitted through a repeater -- so you  
(was, was not)  
answer on channel \_\_\_\_\_.
10. When you hear *two* "chuh" sounds at the end of a transmission you know the message \_\_\_\_\_ retransmitted through a repeater -- so you  
(was, was not)  
answer on channel \_\_\_\_\_.

Check and correct by the Answer Pages. 16

The “chuh” sound is produced by the *release* of the “push to talk” button. When the repeater receives this “chuh” sound it *repeats* it, then it ends *its* transmission with *another* “chuh” sound. This is why you hear *two* “chuh” sounds when the message is going through a repeater.

The two “chuh” sounds from the repeater may be very close together and sound like “chuh chuh”, or they may be spaced up to five seconds apart. Once repeater operation is identified by the “chuh chuh” sound, your transmission should follow the *first* “chuh” sound - while the repeater is on and ready for your transmission.

The *only* time you should say “over” or “clear” is when the transmission is so bad that the “chuh” sound cannot be heard. Normally it is a very bad, unprofessional, practice to say “over”, or to say *anything* which is unnecessary.

Remember that you can only communicate with other radios on the same frequency - those radios on the same NET. (A *net* is a series of radios on the *same frequency*.) For example, the radio in a helicopter flying directly over you will be able to receive your transmissions only if that radio is on the same frequency. Usually radios in airplanes will *not* be on your net. Also, when additional portable or mobile radios are brought in for use during a fire, those radios may not be on the same frequency as the radios on your net.

The next page contains questions about all you have learned so far in this course. If you would like to review, do that now.



Write the answers without looking back at other pages.

1. How many transmitter channels does each radio have? \_\_\_\_\_
2. Each radio transmits on channel(s) \_\_\_\_\_ .
3. Each radio *receives* channel(s) \_\_\_\_\_ .
4. The repeater *receives* channel(s) \_\_\_\_\_ .
5. The repeater retransmits on channel \_\_\_\_\_ .
6. When you are receiving a message *directly* from another radio, how do you know when the sender is through talking and ready for you to answer? \_\_\_\_\_
7. How can you tell that a message is being received through a repeater?  
\_\_\_\_\_
8. When you *receive* a message which has been relayed by a repeater, you answer on channel \_\_\_\_\_ .
9. When you receive a message *directly* from another radio, you answer on channel \_\_\_\_\_ .
10. To *receive* messages, your transmit channel selector may be *turned* to \_\_\_\_\_ or \_\_\_\_\_ .
11. When should you say “over” or “clear” at the end of a transmission?  
\_\_\_\_\_
12. What produces the “chuh” sound?  
\_\_\_\_\_
13. Which radios can you communicate with?  
\_\_\_\_\_
14. When you know a message is coming through a repeater, when should your answering transmission begin? \_\_\_\_\_

Check by the Answer Pages. If you made a mistake, go back and review the pages you need. Then erase and correct your error.

The next section teaches the operational procedures for the radios. The next two pages contain a “self-test” for that section. If you *know* how to operate the radios, try those questions. If you do *not* know how to operate the radios, skip the questions and go on now to page 22.

DO NOT ANSWER THESE QUESTIONS UNLESS YOU ALREADY KNOW HOW  
TO OPERATE PORTABLE AND MOBILE RADIOS.

If you answer *all* of these questions correctly, you may skip the next section.

1. How would you prepare a portable radio, other than personal portable,  
for operation?

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2. How would you prepare a personal portable for operation?

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---

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3. How would you prepare most mobile units for operation?

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4. When the radio is ready for operation, what should you do just before  
you begin transmitting? \_\_\_\_\_

---

Go on to the next page.

5. How should you hold the mike?  
\_\_\_\_\_
6. What must you do to the mike in order to transmit?  
\_\_\_\_\_
7. What do you do as soon as you have finished talking - so that you  
can receive an answer? \_\_\_\_\_
8. When you are transmitting through a repeater, on which channel do you  
transmit? \_\_\_\_\_
9. When the transmit channel selector is turned to channel 2, which channel  
do you *receive*? \_\_\_\_\_
10. How can you tell that you are receiving a message through the repeater?  
\_\_\_\_\_
11. Which channel do you use for direct transmissions? \_\_\_\_\_
12. A repeater receives on channel \_\_\_\_\_ and retransmits on channel \_\_\_\_\_.
13. Will your radio receive transmissions on channel 2? \_\_\_\_\_  
(yes, no)
14. When should you say "over" or "clear"?  
\_\_\_\_\_
15. How do you leave the radios on - to stay on standby?  
\_\_\_\_\_
16. To avoid damage, when should the portable radios be kept in the padded  
carrying bags? \_\_\_\_\_
17. When a portable radio is turned off, what should you do with the  
antenna? \_\_\_\_\_

Check your answers by the Answer Pages. If you missed *any*, go on now to page 22. If you did *not* miss any, go now to page 34.



To make the different radios operational you should follow the steps shown on these pages.

### Step 1

For portable radios (other than personal portables):

**SCREW ON THE ANTENNA .**

Never use the radio without the antenna.

This may damage the radio.



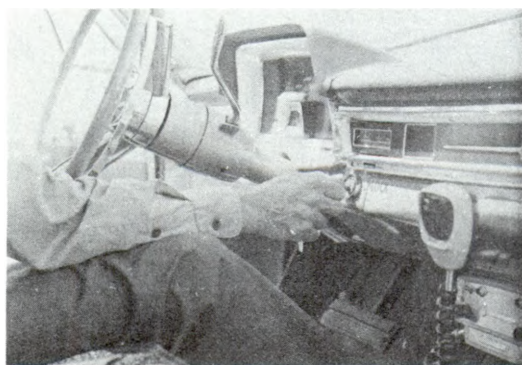
For the *personal portable* radios, completely raise the antenna. This is already attached.

For most *mobile units*:

**TURN ON THE IGNITION.**

Be sure the radio is turned *off* when you start the motor.

Starting the motor while the radio is on may cause the radio to blow a fuse.



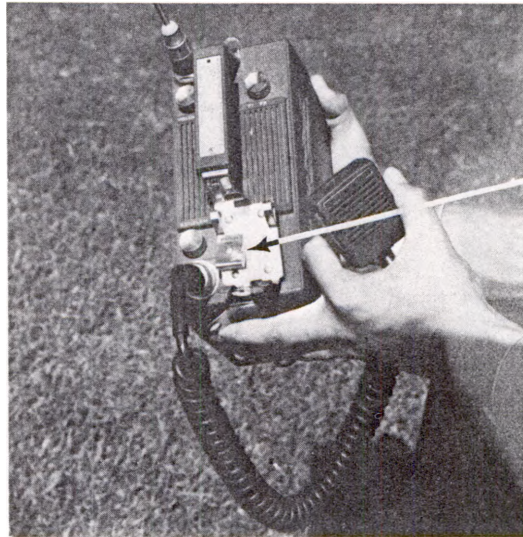
(Some mobile units are wired around, rather than through, the vehicle ignition switch. For those, it is unnecessary to turn on the ignition switch.)

Go on to the next page.

## Step 2

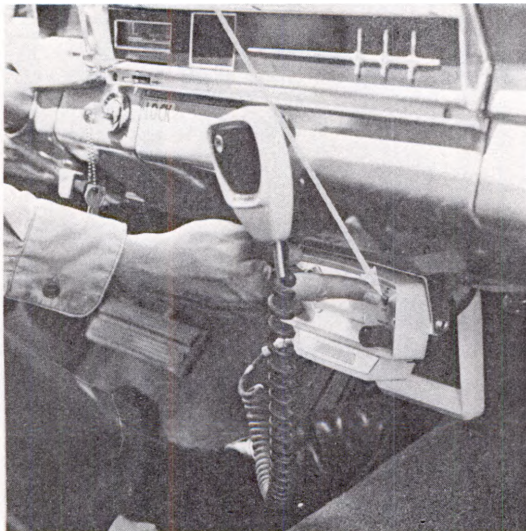
For portable radios (other than personal portables):

**REMOVE MIKE AND TURN THE SET ON BY PUSHING THE ON SWITCH DOWN.**



For mobile and personal portable units:

**TURN THE SWITCH OR KNOB TO THE ON POSITION.**



**Go on to the next page.**



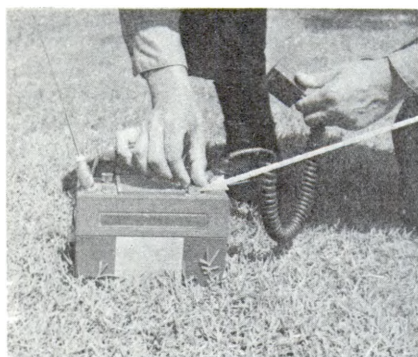
### Step 3

For all radios:

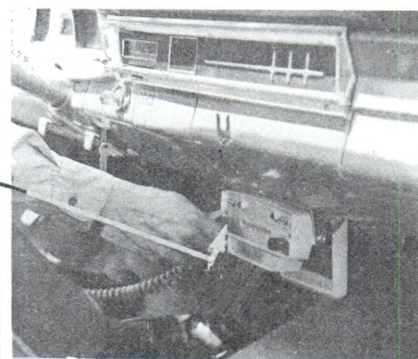
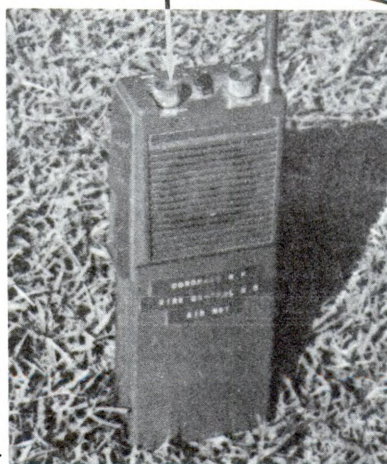
**TURN SQUELCH KNOB TO MAXIMUM NOISE.**

The “squelch” in F.M. radios controls the *background noise*. The squelch knobs are marked on all sets. You should turn the background noise *all the way up*.

If there is *no* noise, the set may not be working properly. It may need batteries. For the solution to operational problems, see your radio technician or work supervisor.



Squelch Controls



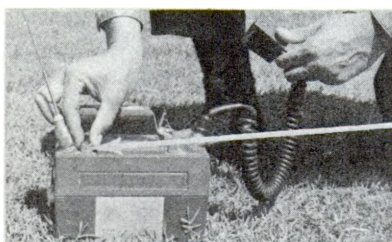
---

### Step 4

For all radios:

**ADJUST VOLUME TO ACCEPTABLE LEVEL.**

Turn the volume knob until the squelch noise, or messages on the the air, are loud enough for you to hear comfortably.



Volume Controls



On the personal portable, the off-on knob is also the volume knob.

### Step 5

For all radios:

**TURN SQUELCH KNOB UNTIL NOISE IS JUST GONE.**

See the squelch controls shown in Step 3 on the opposite page.

The noise is turned to maximum in Step 3 so that you can adjust the volume. After adjusting the volume, this step gets rid of the background noise. Sometimes, however, the message may be very weak. Adjusting the squelch control toward the "noisy" direction may allow you to receive a weak signal that otherwise would be blocked out by the squelch circuits.

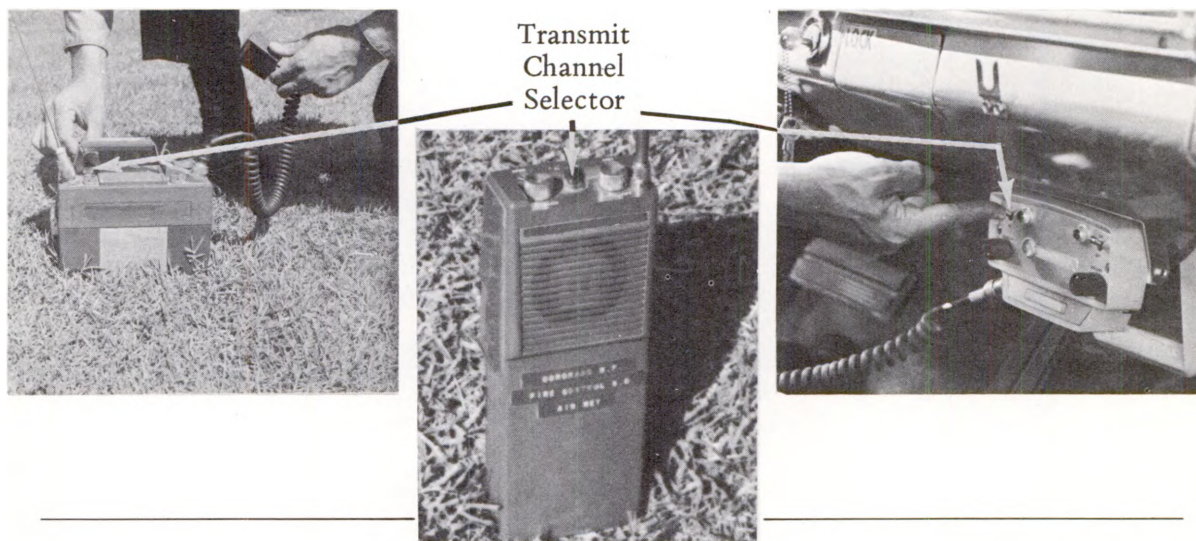
---

### Step 6

**TURN TRANSMIT CHANNEL SELECTOR TO 1 OR 2.**

If transmitting through a repeater, you would turn to channel 2.

If transmitting directly, you would turn to channel 1.



The radios are now operative -- ready for transmitting and receiving.

Remember:

Step 1 - PREPARE (antenna or ignition)

Step 2 - TURN ON

Step 3 - SQUELCH UP

Step 4 - VOLUME

Step 5 - SQUELCH DOWN

Step 6 - CHANNEL



Write the answers. If you cannot remember, look back to the previous pages, pages 22-25.

1. What do you do to the portables (other than personal portables) to prepare them for being turned on?  
\_\_\_\_\_
2. What do you do to prepare the personal portables?  
\_\_\_\_\_
3. What must you do before turning on most mobile units?  
\_\_\_\_\_
4. How do you *turn on* the portables (other than personal portables)?  
\_\_\_\_\_
5. How do you turn on the personal portable and mobile units?  
\_\_\_\_\_
6. For all units, what do you do after turning them on?  
\_\_\_\_\_
7. How should you adjust the squelch control to receive very weak messages?  
\_\_\_\_\_
8. What do you do after turning the squelch to maximum?  
\_\_\_\_\_
9. What is next after adjusting the volume?  
\_\_\_\_\_
10. When the volume is set and the squelch noise is gone, what do you do?  
\_\_\_\_\_

Check and correct by the Answer Pages.

After turning the channel selector transmit knob or switch to the channel on which you want to transmit, you should LISTEN FOR TRAFFIC (for other people talking).

It is very unprofessional - as well as just bad manners - to break in on someone else's transmission. Be sure to *listen* before you talk!

When the air is clear, you should hold the mike *at an angle* to your mouth - about 1 to 2 inches from your mouth. Then push the push-to-talk button and hold the button in while you talk.

Push-to-talk button  
on mike



Notice the mike held *at an angle* to the mouth, about 1 to 2 inches away from the mouth.



As soon as you have finished talking, *release* the push-to-talk button. The receiving party will then hear the "chuh" sound and will know that you are ready for him to answer.

Remember - you must have the button pushed in to transmit  
- and -  
you must release the button to receive.

Write the answers to the questions below.

1. In your own words tell how you would prepare the portables (other than personal portables) for operation. List the steps in order.

---

---

---

---

---

2. How would you prepare the personal portables for operation?

---

---

---

---

---

3. How would you prepare most mobile units for operation?

---

---

---

---

---

Go on to the next page.

4. When the radio is ready for operation, what should you do just before you begin transmitting?

---

---

5. What must you do to the mike in order to transmit?

---

---

6. How should you hold the mike?

---

---

7. What do you do when you have finished talking - so that you can *receive* messages?

---

---

Check and correct by the Answer Pages.



After the transmission is complete, you may want to leave the radio on so that you can receive calls. To keep the portables on standby, simply replace the mike *FACE UP* in the mike bracket on the radio. This will *not* turn the radio off and is a convenient resting place for the mike.

#### PORTABLE LEFT ON STANDBY

MIKE  
FACE  
UP



To leave the other radios on, simply *do not turn them off*. When you *are* ready to turn them off, just turn the knob or flip the switch to the off position. Then lower the antenna on the personal portable.

Most base station radios are left on continuously. Leaving these radios *on* causes less wear and tear than frequent turning on and off. Your work supervisor will tell you the correct procedure for base stations in your area.

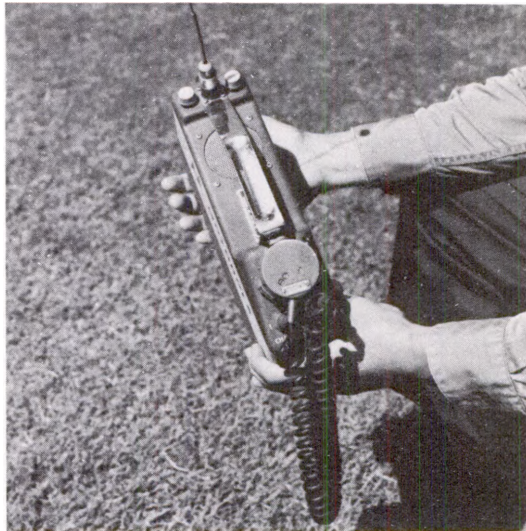
To turn off the portable radios, replace the mike in the mike holder  
*FACE DOWN*. The mike pushes the off-on switch to off.

See the portables below.

Mike being placed  
face down, to turn  
portable off



Mike placed  
face down,  
radio off



When the portable is *turned off*, remove the antenna (it unscrews).

Remember - never remove the antenna until the transmission is finished.  
Transmitting without the antenna can damage the set.

Portable radios should be kept *inside* a padded carrying bag for most normal use, especially on fire control assignments where they may be damaged during the rush to control the fire. Fire retardant chemicals dropped from aircraft can damage and corrode these sensitive expensive radios. Leaving the radio in the padded carrying bag during use will minimize chances of damages. When the radio is *not* in use, it and the antenna should always be stored in the bag. Remember - a portable radio costs about the same as an expensive color T.V. set. Don't let this valuable equipment be damaged!

Write the answers to these questions.

Do *not* look back at previous pages until you have finished this page and the next.

1. How would you prepare a portable radio, other than personal portable, for operation?

---

---

---

2. How would you prepare a personal portable for operation?

---

---

---

3. How would you prepare most mobile units for operation?

---

---

---

4. When the radio is ready for operation, what should you do just before you begin transmitting? \_\_\_\_\_

---

5. How should you hold the mike?  
\_\_\_\_\_
6. What must you do to the mike in order to transmit?  
\_\_\_\_\_
7. What do you do as soon as you have finished talking - so that you  
can receive an answer? \_\_\_\_\_  
\_\_\_\_\_
8. When you are transmitting through a repeater, on which channel do you  
transmit? \_\_\_\_\_
9. When the transmit channel selector is turned to channel 2, which channel  
do you *receive*? \_\_\_\_\_
10. How can you tell that you are receiving a message through the repeater?  
\_\_\_\_\_
11. Which channel do you use for direct transmissions? \_\_\_\_\_
12. A repeater receives on channel \_\_\_\_\_ and retransmits on channel \_\_\_\_\_ .
13. Will your radio receive channel 2? \_\_\_\_\_  
(yes, no)
14. When should you say "over" or "clear"?  
\_\_\_\_\_
15. How do you leave the radios on - to stay on standby?  
\_\_\_\_\_
16. To avoid damage, when should the portable radios be kept in the padded  
carrying bags? \_\_\_\_\_
17. When a portable radio is turned off, what should you do with the  
antenna? \_\_\_\_\_

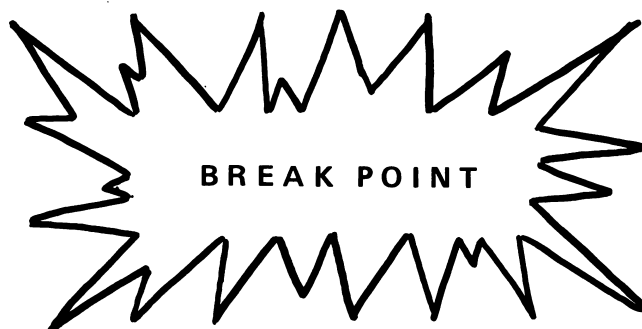
Check and correct by the Answer Pages.

NOTE

BATTERY DRAIN ON MOBILES

Transmitting from any battery operated radio drains the battery rather rapidly. To avoid this drainage on a mobile unit, run the engine while transmitting. (Be sure the radio is turned off when you start the engine. Then turn it on when the engine is running.)

FOR SAFETY – To avoid carbon monoxide fumes from the exhaust be sure to have plenty of ventilation when the engine is running! Roll the window down.



Unless you have time to work for at least another hour or more, stop now. Start again tomorrow (or as soon thereafter as possible) with the next page.



You have learned to *operate* the radio. You will begin learning now how to *talk* on the radio.

These are some characteristics of good radio messages:

1. Speak clearly, at a constant speed, with rhythm of ordinary conversation.
2. Speak with normal volume for conversation. Your message will be distorted if you speak too loudly.
3. Omit unnecessary sounds.
4. Report facts, not opinions, unless your opinion is specifically asked for.
5. Do not use profane language.
6. Use for official purposes only.
7. BE BRIEF! Do not use unnecessary words. (Do *not* say “please” and “thank you” on the air.)
8. Make your message to the point by *planning your message*. Know what you are going to say before you press the push-to-talk button. Do *not* do your thinking out loud, on the air.

<p>A professional radio message might best be described as CLEAR, CONCISE, and COMPLETE.</p>
--

Below are examples of *bad* radio messages.

After each message, you write *why* it is bad.

1. "I think the fire started in the old barn, maybe by kids smoking.

I saw some in there earlier." *What is wrong with this message?*

---

2. "Joe, will you call my wife on the phone and remind her that she has a dental appointment this afternoon?"
- 

3. "This x!7\*&¢%# car has broken down again."
- 

4. "Well, I'd say the time is now - er - um - oh - say - 12 noon."
- 

5. "Smith, would you please contact (mumble-mumble) Joe and you two come over here?"
- 


6. "I don't know exactly whether you should - well never mind, you decide how many we'll need here."
- 

Check by the Answer Pages.

The next section teaches the use of the new standard 10-code.

You should take this next section even if you are familiar with the 10-code, to improve your speed and fluency.

*No one* should skip this 10-code section!

Begin now 

Since many people must talk on the same radio "line," radio messages should be as brief and to the point as possible. The 10-code is one code devised for this purpose. Use of the 10-code and observance of other procedures in this program will enable you to quickly transmit clear, concise, and complete messages and will identify you as a *professional* radio user.

The 10-code illustrated in this manual is standard for nationwide use in the Forest Service. It has replaced older and different 10-codes which varied among regions. This new standard 10-code also replaces the 4-code formerly used in some areas.

When special needs exist, some regions may also use a 9-code in addition to this standard 10-code. Only the standard 10-code will be taught in this course. Your work supervisor can explain other code use, if necessary.

If your message is not covered by the standard 10-code, use simple, clear words to convey your meaning as clearly and briefly as possible.

To help you learn the 10-code quickly, "mediators" are used in this program. These mediators are phrases or ideas which help you "connect" each code number to its meaning. Some may sound silly to you, but the important thing is whether or not they *work*. If you think of other mediators which will help *you* remember more easily than those given here, you may use your own, of course.




The 10-code is so named because each code number begins with 10. The number *following* the 10 indicates the meaning.

The 10-code numbers and their meanings are shown below. Notice that the numbers are not continuous. For example, 10-14 through 10-18 are not included. Read the codes briefly but do *not* try to memorize them now.

- |  |  |
|--|--|
| 10-1 — Receiving poorly  | 10-20 — What is your location?             |
| 10-2 — Receiving well  | 10-22 — Disregard last message             |
| 10-3 — Stop transmitting   | 10-25 — Do you have contact with _____?    |
| 10-4 — OK or acknowledgment  | 10-33 — Emergency traffic at this station  |
| 10-5 — Verbal repeat to third person<br>(used to ask one person to<br>give a message to another<br>person) | 10-36 — Correct time                       |
|  | 10-39 — Can _____ come to the radio?       |
| 10-6 — Stand by  | 10-40 — Is _____ available for phone call? |
| 10-7 — Out of service (radio turned off)   | 10-43 — Turn repeater on                   |
| 10-8 — In service (radio turned on)  | 10-44 — Turn repeater off                  |
| 10-9 — Repeat beginning with _____   | 10-49 — Proceed to _____                   |
| 10-10 — At home (out of service)<br>subject to call  | 10-71 — Advise nature of fire              |
| 10-11 — Transmitting too rapidly   | 10-72 — Report progress on fire            |
| 10-13 — Weather (request for<br>weather report or said<br>with weather report)                             | 10-86 — Routine check in                   |
| 10-19 — Return to station, or am<br>returning  | 10-97 — Arrived at scene                   |

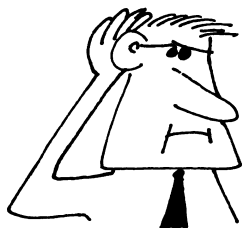


The first four 10-code signals are given below. Read the *mediators* very carefully. They will make it easier for you to remember what each code number means.

Code Number		Mediator		Meaning
10-1	➡	<p>From 1 in 10-1, think of <i>one ear</i></p>  <p>can't hear well with only <i>one</i> ear.</p>	➡	can't hear well or receiving poorly
10-2	➡	<p>Think of <i>two ears</i></p>  <p>can hear with <i>two</i> ears.</p>	➡	can hear or receiving well
10-3	➡	<p>Think of the <i>3 bulbs on a stoplight.</i></p> 	➡	stop transmitting
10-4	➡	<p>You've probably heard this on T.V. enough to remember it without a mediator.</p>	➡	OK or acknowledgment

Now, see if you can write the meanings of these four 10-code signals *without* looking at the opposite page. The mediators will help you remember.

10-1 means



\_\_\_\_\_

fill in

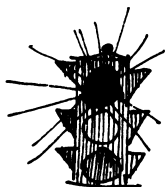
10-2 means



\_\_\_\_\_

fill in

10-3 means



\_\_\_\_\_

fill in



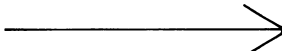

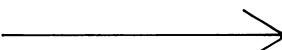

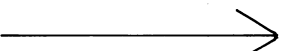

10-4 means

\_\_\_\_\_

fill in

Your meanings need not be written in exactly the same words as those on the opposite page, but they must *mean* the same. Check your work by the meanings given on the opposite page.

On this page *you* write the *code* number which goes with the meaning. The mediators will help you remember.

<i>Message</i>		<i>Code Number</i>
Can't hear well – I'm receiving your message poorly.	can't hear with one ear 	 fill in code
I can hear you well now. Reception is good.	can hear with two ears 	 fill in
Stop Transmitting	stoplight has 3 bulbs 	 fill in
OK, I got your message.		 fill in

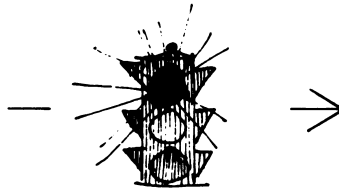
Go on to the next page.

On the previous page, you should have written 10-1, 10-2, 10-3, and 10-4, *in that order*.

---

Below, continue to write the code numbers.

Stop transmitting.



— →             
fill in

Can't hear --  
receiving poorly.



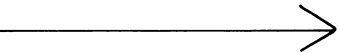
— →             
fill in

Can hear now,  
reception is fine.



— →             
fill in

OK or acknowledgment



— →             
fill in

---

Your answers above should be in this order:

10-3  
10-1  
10-2  
10-4

*Always* correct a wrong answer. You are most likely to remember it the way you leave it.

Now you write the *meanings* again. Think of the mediators if you have trouble remembering.

10-1 means \_\_\_\_\_  
fill in

10-4 means \_\_\_\_\_  
fill in

10-2 means \_\_\_\_\_  
fill in

10-3 means \_\_\_\_\_  
fill in

Look back to page 40 to check your answers.

Once more, fill in the code number.

<i>If the message is -</i>		<i>- You should say</i>
OK - got your message.	→	<div>fill in</div>
I'm receiving poorly, transmission is bad.	→	<div>fill in</div>
I can hear you fine now, am receiving well.	→	<div>fill in</div>
Stop transmitting.	→	<div>fill in</div>

Check by page 40 unless you are *certain* that your answers are correct.



The next five 10-code signals are shown on this page and the next.  
 Read these *carefully* and remember the mediators and the meanings.

Code Number

Mediator

Meaning

10-5 ➡

5 sounds like *find* -  
 Find Forester \_\_\_\_\_  
 and tell him ---



Verbal repeat  
 to third person.  
 (Note: The message  
 should be *written*  
 if possible, so that  
 it will not be changed  
 when it is repeated.)

10-6 ➡

To hold up 6 fingers,  
 one is *standing by*  
 the others.



Stand by

or

Am standing by

10-7 ➡

7 is a lucky number.  
You are *lucky* when  
you are *out of service*,  
as on vacation.



Out of service -  
Radio was, or will be  
turned off.

10-8 ➡

8 AM is a usual time  
for getting to work -  
turning on radio.



In service -  
Radio turned on.


10-9 ➡

9 sounds like *nein* -  
the German word for  
*no*. 10-9 means *no* -  
*didn't hear* - *repeat*.




Repeat, beginning  
with \_\_\_\_\_.


Write the correct code number for each message below.

Message		Code Number
Find ____ via radio and give him this message --	Five sounds like Find.	
		_____ fill in

---

I am standing by the radio for further messages.		_____ fill in
--	---	------------------

---

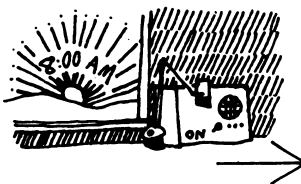
I will be out of service. I'm turning off my radio.	Lucky to be "out of service." What is a lucky number?		_____ fill in
---	---	--	------------------

---

Go on to next page.

I'm back in service -  
my radio is turned  
on.

Time to turn  
on radio and  
get to  
work - 8 AM.



fill in

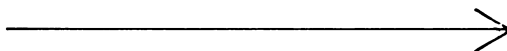
No - I didn't hear  
all that; start over  
beginning with \_\_\_\_.

No in  
German is  
"nein".  
(Pronounced  
like "nine")



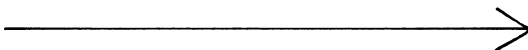
fill in

Receiving poorly -  
I can't hear you well.



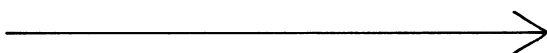
fill in

Receiving well -  
I can hear you well.



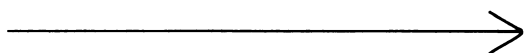
fill in

Stop transmitting.



fill in

OK - I acknowledge  
your message.



fill in

Check this page and the last one by the Answer Pages.

Again write the code numbers. They are *not* in any particular order here.

Message		Code Number
No - didn't hear. Start again with _____.	No - nein 	_____ fill in
<hr/>		

The reception is so bad I can't hear you.	_____ →	_____ fill in
<hr/>		

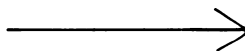
Stop transmitting.	_____ →	_____ fill in
<hr/>		

The reception is fine now. I can hear you clearly.	_____ →	_____ fill in
<hr/>		

Repeat that message to Forester _____ via the radio.		_____ → fill in
<hr/>		

Go on to next page.

Stand by



fill in

I'm going out of  
service - turning  
off my radio.

Lucky to be  
out of service -  
lucky number?



fill in

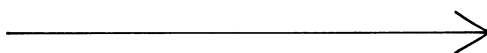
I'm back in service -  
my radio is turned  
on.

My radio is on -  
reporting for  
work.



fill in

I got your message -  
OK.



fill in

Check by the Answer Pages.



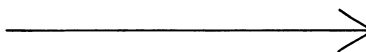
This time you write the *meanings* in your own words. The mediators will help you remember.

*Code Number*

*Meaning*

10-1

1 ear



fill in

10-9

nine-nein-no



fill in

10-7

“lucky”



fill in

10-8

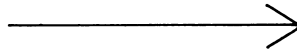
8 AM - “turn on  
for work.”



fill in

10-2

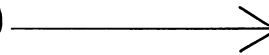
2 ears



fill in

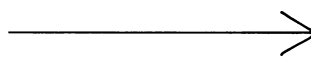
10-5

10-FIVE (FIND) FORESTER  
JONES AND TELL HIM...



fill in

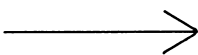
10-6



fill in

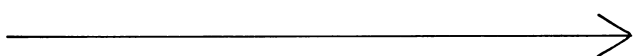
10-3

3 bulbs in *stoplight*



fill in

10-4



fill in

Check by the Answer Pages.

Always correct any wrong answer.

Write the code numbers for these messages *without* looking back at any other pages.

<i>Message</i>		<i>Code Number</i>
Repeat beginning with _____ .	→	_____
Receiving poorly	→	_____
Receiving well	→	_____
OK or acknowledgment	→	_____
Verbal repeat to third person	→	_____
Stand by	→	_____
In service	→	_____
Out of service	→	_____
Stop transmitting	→	_____

Check (and correct if necessary) by the Answer Pages.

If you missed any on the last page, write them over again two or three times on this page. Write the message, the *mediator* and the code number each time.

Write the meanings of these code numbers. Do not look back at any other pages until you have finished this page.


<i>Code Number</i>		<i>Message</i>
10-1	→	_____
<hr/>		
10-2	→	_____
<hr/>		
10-3	→	_____
<hr/>		
10-4	→	_____
<hr/>		
10-5	→	_____
<hr/>		
10-6	→	_____
<hr/>		
10-7	→	_____
<hr/>		
10-8	→	_____
<hr/>		
10-9	→	_____
<hr/>		

Check and correct by the Answer Pages.

If you missed any on the opposite page, write the code number, the *mediator* and the message. Do this three or four times for each one you missed, or for any you had trouble remembering.



More code numbers are presented on this page and the next. Read each one very carefully.

<i>Code Number</i>	<i>Mediator</i>		<i>Message</i>
10-10 (Say, "Ten-ten")	Ten-ten sounds like to the <i>tent</i> - telephone me.		At home, out of service (in the tent) subject to call (by phone).

---

10-11  
(Say,  
"Ten-  
eleven")

*Eleven* sounds  
like *let-up!*  
*Slow-up!*  
Going too fast.



Transmitting  
too rapidly.

---

10-13  
(Say,  
"Ten-  
thirteen")

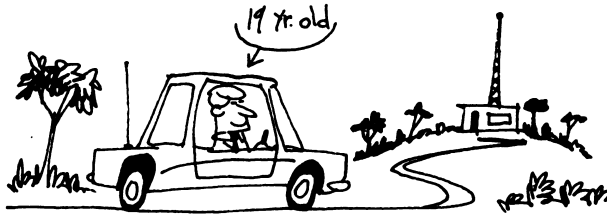
The thirteenth may  
be a *rainy* day.



Weather ---  
Transmit weather  
information.

---

10-19  
(Say, "Ten-  
nineteen")



Return to station  
or  
am returning.

Nineteen year olds are too young to run  
away. They should return to their stations.

---

10-20  
(Say, "Ten-  
twenty")

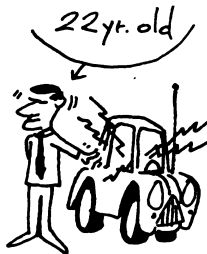


What is your  
location?

Twenty year olds can stay away but should  
give their locations.

---

10-22  
(Say, "Ten-  
twenty two")



Disregard last  
message.

Twenty two year olds are old enough to  
*disregard* "parental" messages.

---

10-25  
(Say, "Ten-  
twenty five")



Do you have  
contact with  
\_\_\_\_\_?

Are twenty five year olds ready for  
serious contacts?

---

Try to write the messages meant by the code numbers on this page and the next. Look back to the previous pages if you can't remember.

*Code Number*

*Mediator*

*Message*

10-10

TENT

TELEPHONE




---

---

---

10-11

Eleven  
sounds  
like  
let-up!




---

---

---

10-13

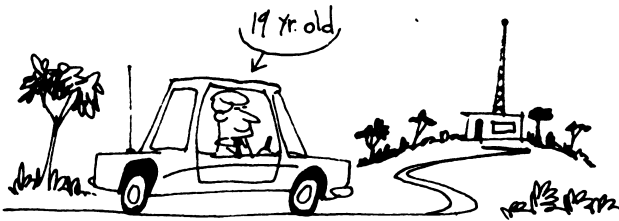



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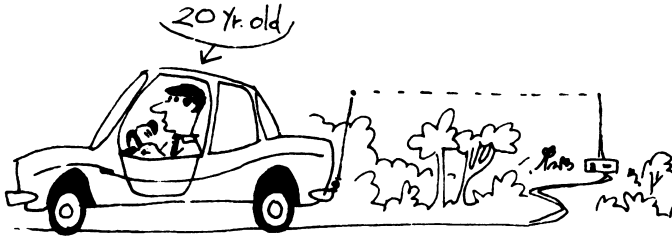
---

10-19



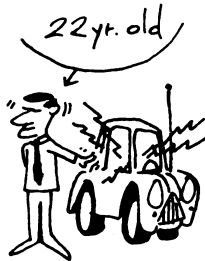
Nineteen year olds are too young to run away. They should return to their stations.

10-20



Twenty year olds can stay away but should give their locations.

10-22



Twenty two year olds are old enough to disregard "parental" messages.

10-25



Are twenty five year olds ready for serious contacts?

Check your messages by the previous two pages. Be sure the *meanings* match. They need not be word for word the same but must express the same ideas.

This time write the code numbers. The mediators will help you remember.  
Do not look back at other pages until you have finished.

*Message*

*Mediator*

*Code Number*

Do you have contact  
with \_\_\_\_\_ ?



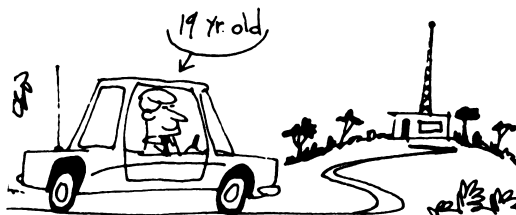
\_\_\_\_\_

Weather



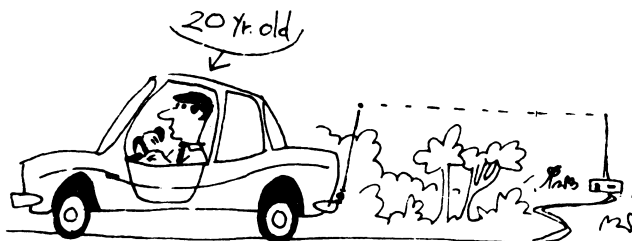
\_\_\_\_\_

Return to station  
or  
am returning to station.

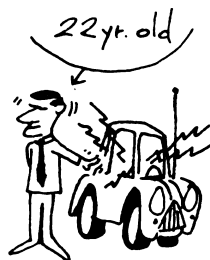


\_\_\_\_\_

What is your location?



Disregard last message.



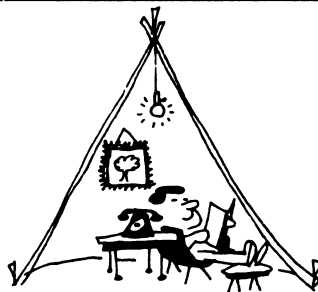
Twenty-two year olds are old enough to disregard "parental" messages.

Transmitting too rapidly.



Out of service at home subject to telephone call.

TENT



Check by the Answer Pages.

This time write the messages. Try to write these without looking back at previous pages. Think of the *mediators* and they will help you remember the messages.

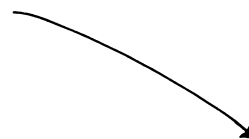
<i>Code Number</i>		<i>Message</i>
10-11	→	_____
<hr/>		
10-10	→	_____
<hr/>		
10-22	→	_____
<hr/>		
10-20	→	_____
<hr/>		
10-19	→	_____
<hr/>		
10-25	→	_____
<hr/>		
10-13	→	_____
<hr/>		

Check by the Answer Pages.

The next two pages contain all of the 10-code numbers which you have learned thus far in this course. You will be asked to write the code number which should be said to convey each message by radio. You should think of the mediators if you have trouble. Do *not* look back at other pages until you have finished the next two pages.



YOU WRITE THE CORRECT CODE NUMBERS



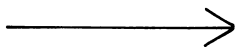
<i>Message</i>		<i>Code Number</i>
Verbal repeat to third person	→	_____
In service (radio turned on)	→	_____
Repeat beginning with _____ .	→	_____
Receiving poorly	→	_____
Receiving well	→	_____
OK or acknowledgment	→	_____
Out of service	→	_____
Out of service, at home, subject to call.	→	_____

Go on to the next page.

*Message*

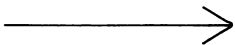
*Code Number*

What is your location?



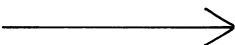
\_\_\_\_\_

Do you have contact with \_\_\_\_\_ ?



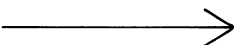
\_\_\_\_\_

Stand by



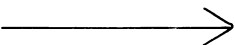
\_\_\_\_\_

Return to your station.



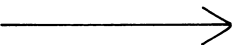
\_\_\_\_\_

Stop transmitting.



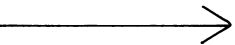
\_\_\_\_\_

Weather



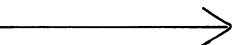
\_\_\_\_\_

Transmitting too  
rapidly.



\_\_\_\_\_

Disregard last  
message.



\_\_\_\_\_

Check by the Answer Pages.

Always correct any error.

Four new code numbers are shown below.

Read them carefully.

*Code Number*

*Mediator*

*Message*

10-33  
(Say, "Ten-  
thirty three")

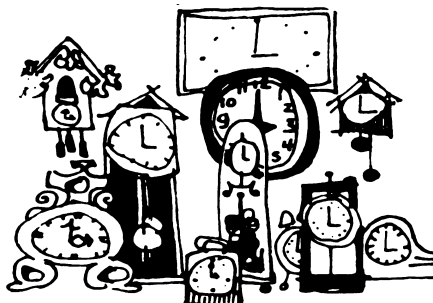
Three-ee-ee - Sounds  
like an *emergency*  
traffic siren.



Emergency traffic  
at this station

10-36  
(Say, "Ten-  
thirty six")

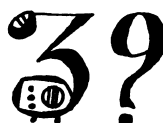
Thirty-six clocks  
should be enough to  
give the correct time.



Correct time -  
The correct time  
is \_\_\_\_\_, or  
what is the  
correct time?

10-39  
(Say, "Ten-  
thirty nine")

Think of 39 as a  
radio and a  
question mark.



Can \_\_\_\_\_ come  
to the radio?

10-40

In the 40's people  
had *telephones* that  
looked like this -  
See the 40.



Is \_\_\_\_\_  
available for  
phone call?

Now write the code numbers for the messages below. Write them without looking at the opposite page.

Message

Mediator

Code Number

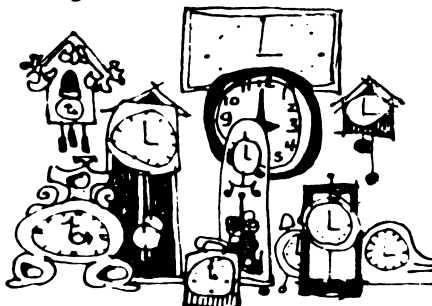
Emergency traffic  
at this station

Three-ee-ee — Sounds  
like an *emergency*  
traffic siren.



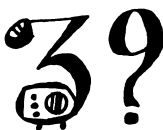
Correct time —  
The correct time  
is \_\_\_\_\_, or  
what is the  
correct time?

Thirty-six clocks  
should be enough to  
give the correct time.



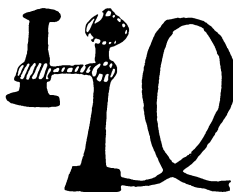
Can \_\_\_\_\_ come  
to the radio?

Think of 39 as a  
radio and  
a question mark.




Is \_\_\_\_\_  
available for  
phone call?

In the 40's people  
had *telephones* that  
looked like this —  
See the 40.



Those four new code messages and various others which you have learned are below. Write the correct code number for each message.

<i>Message</i>	<i>Mediator</i>	<i>Code Number</i>
Can ____ come to the radio?	Which numbers can look like a radio and a question mark?	_____
Correct time	How many clocks?	_____
Transmitting too rapidly	Let-up!	_____
Verbal repeat to third person ( <i>not</i> through a repeater)	“Find Forester X and tell him - -” (Find sounds like _____ ?)	_____
Emergency traffic at this station	An emergency traffic siren sounds like - - - eee.	_____
Do you have contact with _____ ?	At what age are you ready for serious contacts?	_____
Is _____ available for a phone call?		_____

Check by the Answer Pages.

Now you write the message conveyed by each code number below. *Think of the mediators* if you have trouble remembering.

Code Number		Message
10-40	→	_____
10-39	→	_____
10-10	→	_____
10-5	→	_____
10-8	→	_____
10-33	→	_____
10-36	→	_____
10-9	→	_____
10-7	→	_____
10-3	→	_____
10-25	→	_____

Check by the Answer Pages.

Write the code numbers again. Do *not* look back at other pages until you have finished this page.

<i>Message</i>		<i>Code Number</i>
Repeat beginning with _____ .	—————>	_____ (fill in)
In service - radio turned on.	—————>	_____ (fill in)
Verbal repeat to third person.	—————>	_____ (fill in)
What is your location?	—————>	_____ (fill in)
Can ____ come to the radio?	—————>	_____ (fill in)
Is ____ available for a phone call?	—————>	_____ (fill in)
Out of service, at home, available for telephone call.	—————>	_____ (fill in)
Out of service - radio turned off.	—————>	_____ (fill in)
Emergency traffic at this station.	—————>	_____ (fill in)
Correct time	—————>	_____ (fill in)

Check by the Answer Pages.

If you missed any on the opposite page, or if you had trouble remembering any, write them again on this page. For each, write the message, the *mediator* and the code number several times.



Three more 10-code signals are shown below. Read them *very* carefully.

*Code Number*

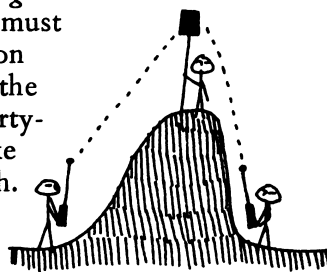
*Mediator*

*Message*

10-43

To have a message  
*forwarded through*  
a repeater, you must  
ask the person on  
the hill to turn the  
repeater on. Forty-  
three sounds like  
*forward through*.

Turn on repeater.



---

10-44

The repeater must be  
turned off after the  
message is *forwarded*  
*through*.  
10-44 is after 10-43

Turn off repeater.

---

10-49

The '49ers  
*proceeded*  
to California  
during the goldrush.

Proceed to \_\_\_\_\_.



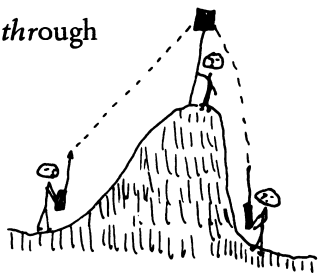
You write the code number for each message below.

*Message*

*Code Number*

Turn on repeater.

*Forward through*



\_\_\_\_\_   
 fill in

Repeat beginning  
with \_\_\_\_\_.

\_\_\_\_\_   
 fill in

Proceed to \_\_\_\_\_.

'49ers



\_\_\_\_\_   
 fill in

Return to station.

\_\_\_\_\_   
 fill in

Verbal repeat  
to third person.

\_\_\_\_\_   
 fill in

Turn off repeater.

The repeater must  
be turned off *after*  
the message is  
*forwarded through*.

\_\_\_\_\_   
 fill in

Correct time

\_\_\_\_\_   
 fill in

Check by the Answer Pages.

In your own words, you write the messages conveyed by the code numbers below.

*Code Number*

*Message*

10-5

---

10-9

---

10-33

---

10-39

---

10-49

---

10-36

---

Go on to the next page.

*Code Number*

*Message*

10-43

---

10-44

---

10-7

---

10-8

---

10-40

---

10-3

---

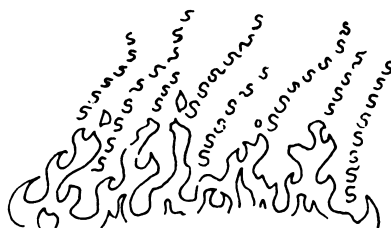
10-25

---

Check by the Answer Pages.

The last four 10-code signals are shown on these two pages. Study them for a few minutes.

The two 10-code signals which directly concern *fire* are 10-71 and 10-72. These are the *only* 10-code signals you will learn in the 70's. Think of the hissssing sound a fire makes - to associate *ssseventy* with *fire*.



<i>Code Number</i>	<i>Mediator</i>	<i>Message</i>
10-71	Think of <i>ssss first</i> . (1) You need to know the <i>nature</i> of the fire - what is burning, etc.	Advise nature of fire.
10-72	<i>Second</i> (2) You would want to check the <i>progress</i> on the fire.	Report progress on fire.

10-86

By age 86 one  
should have frequent  
*routine check-ups* (in).

Routine check in

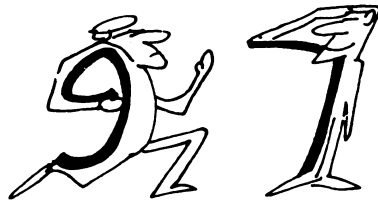


---

10-97

The numbers can  
look like rushed  
to scene, and reporting  
for duty.

Arrived at scene



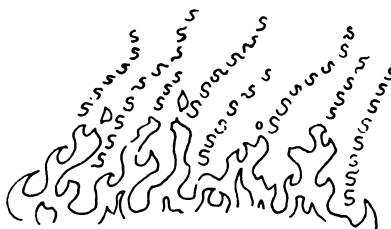
Write the messages

Code Number

Mediator

Message

10-71



FIRST

10-72



SECOND

10-86



10-97



If you are not *certain* that your messages are correct, check them by the previous pages.

Now write the code numbers

*Message*

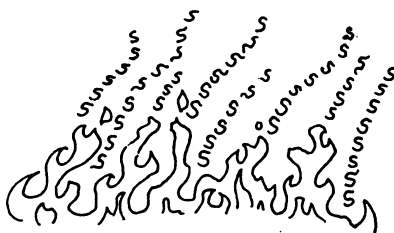
*Mediator*

*Code Number*

Routine check in.

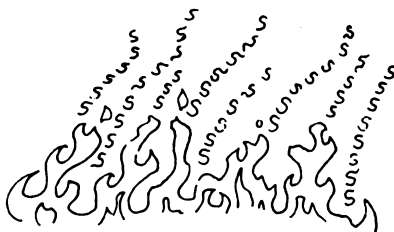


Advise nature of fire.



FIRST

Report progress on fire.



SECOND

Arrived at scene.



Check by the previous pages, if necessary.



Parts of "bad" wordy radio transmissions are shown below on the left side.

You re-write each part on the line on the right. Use codes as much as possible. The first is done to show you how.

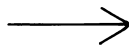
BAD RADIO MESSAGES	GOOD RADIO MESSAGES
1. The transmission is so bad I can't hear a word you're saying. Stop transmitting.	10-1, 10-3  _____
2. I read you loud and clear now. The transmission trouble is all cleared up.	_____
3. Call Smith on the radio and tell him this:	_____
4. I want to speak to Joe Brown. Will you see if you can find him and see if he can come to the radio?	_____
5. Stop transmitting and stand by.	_____
6. Jones, we need you at the station; come back now.	_____

Go to the next page.

*BAD RADIO MESSAGES*

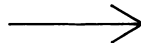
*GOOD RADIO MESSAGES*

7. What time is it?



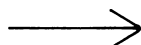
\_\_\_\_\_

8. What is the weather  
forecast for tomorrow?



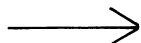
\_\_\_\_\_

9. I'm going home now and will  
not be by the radio. Call  
me if you need me, at home.



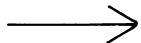
\_\_\_\_\_

10. I'm making a routine check in.



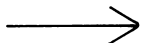
\_\_\_\_\_

11. Will you please try to describe  
the fire?



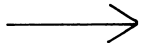
\_\_\_\_\_

12. I am finally at the site.



\_\_\_\_\_

13. How's the fire doing now?



\_\_\_\_\_

Check and correct by the Answer Pages.

For these two pages you will need a partner and a watch with a sweep second hand.

Your partner should read the code numbers to you and you should give the meanings as quickly as possible. Then you should read the code numbers to him and time and check him. You should both continue to practice until you can each do this without error, in 90 seconds. If you do not have a partner who is also taking the lesson, you can let someone else read the code numbers to you, check you, and time you. It is important that you *hear* the numbers and *say* the meanings. Remember that the meanings do not need to be word for word the same as those here - but they must express the same general idea. If you are alone, you can cover the messages with a piece of paper and say the meanings as you read the code numbers aloud. Be sure to time yourself, and check the messages when you have finished saying them.

BEGIN TIMING

*Code Number (to be read aloud)*



10-1

*Message (to be given aloud from memory)*



Receiving poorly  
or  
Can't hear well

10-2

Receiving well  
or  
Can hear fine

10-3

Stop transmitting

10-4

OK or acknowledgment

10-5

Verbal repeat to third person  
or  
Give this message to \_\_\_\_ .

10-6

Stand by

10-7

Out of service  
or  
Radio turned off

10-8

In service  
or  
Radio turned on

Go on →

10-9	Repeat beginning with ____ .
10-10	At home, out of service, subject to telephone call
10-11	Go slower
10-13	Weather
10-19	Return to station or am returning to station
10-20	What is your location?
10-22	Disregard last message
10-25	Do you have contact with ____ ?
10-33	Emergency traffic at this station
10-36	Correct time
10-39	Can ____ come to the radio?
10-40	Is ____ available for phone call?
10-43	Turn repeater on
10-44	Turn repeater off
10-49	Proceed to ____
10-71	Advise nature of fire
10-72	Report progress on fire
10-86	Routine check in
10-97	Arrived at scene

#### NOTE TIME ELAPSED

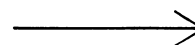
Record your \_\_\_\_\_  
time for each \_\_\_\_\_  
try. \_\_\_\_\_

This time the one reading should read the *message* aloud. The other should say the *code number* in response. Practice in the same way as for the last two pages - until each of you can do this without error, in 90 seconds. Again, if you are alone, cover the code numbers, read the messages aloud, and give the code numbers aloud. Time yourself on each try.

Be sure to say ten-*thirty* six (not ten-three-six), ten-twenty two (not ten-two-two), etc.

*BEGIN TIMING*

<i>Message</i> (to be read aloud)	<i>Code Number</i> (to be given aloud from memory)
Disregard last message	10-22
Can _____ come to the radio?	10-39
Turn repeater on	10-43
Turn repeater off	10-44
Verbal repeat to third person	10-5
Out of service	10-7
At home, out of service, subject to call	10-10
Repeat, beginning with _____	10-9
Receiving poorly	10-1
OK or acknowledgment	10-4
Do you have contact with _____ ?	10-25



Report progress on fire	10-72
Receiving well	10-2
Stand by	10-6
In service	10-8
Routine check in	10-86
Proceed to ____	10-49
Arrived at scene	10-97
Advise nature of fire	10-71
Is _____ available for phone call?	10-40
Correct time	10-36
Emergency traffic at this station	10-33
What is your location?	10-20
Return to station	10-19
Weather	10-13
Go slower	10-11
Stop transmitting	10-3

Record time for each try:

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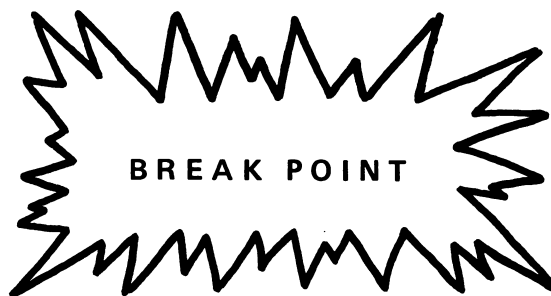


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Remember that some regions may also use the 9-code, in addition to the standard 10-code. For the purpose of this course, you need only remember that the 9-code does exist and is sometimes used on Forest Service radios. Ask your work supervisor for advice about this.



If you do not plan to continue for at least another hour or more, stop here. Continue tomorrow (or as soon as possible thereafter) with the next page.



Next you will learn how to transmit *numbers*. Some numbers may be said as *whole* numbers, such as “thirty six” or “one hundred and forty three”. The 10-code signals are said as whole numbers, as you’ve learned. For greater clarity, however, most numbers should be transmitted as *separate digits*, such as “three-six” (for thirty six) or “one - four - three” (for 143).

These numbers are said as whole numbers (as you say them normally in conversation):

Whole units of 1000	-	say one thousand; two thousand; etc.
Day of month	-	say January twenty one; December fifteen, etc.
Code number	-	say ten-twenty two, etc.
Time measurement	-	say thirty minutes; twenty four hours, etc.

Other numbers are read as *separate digits*.

For example:

- Car 23 is said as: Car *two - three*.
- 21 trees is said as: *two - one* trees.
- 18 cows is said as: *one - eight* cows.
- 10 trucks is said as: *one - zero* trucks.
- 1243 is said as: *one - two - four - three*.
- 100 is said as: *one - zero - zero*.

You write out the numbers below as they should be *said* on the radio.  
 Look back to the opposite page if you need help.

The first one is done to show you how.

	When the number is written as this	-----	You say this
1.	12 trucks		<u>One - Two trucks</u>
2.	13 deer		_____
3.	November 25		_____
4.	1000		_____
5.	1024		_____
6.	Code no. 10-20		_____
7.	Code no. 10-44		_____
8.	3000 trees		_____
9.	Car 86		_____
10.	Car 100		_____
11.	30 minutes		_____

Check by the Answer Pages.

Do the same with these.

Do not look back at previous pages until you have finished this page.

When the number

is this

— You say this

- |     | is this               |  | You say this |
|-----|-----------------------|--|--------------|
| 1.  | 10-4                  |  |              |
| 2.  | 10-40                 |  |              |
| 3.  | Car 10                |  |              |
| 4.  | 2000 dollars          |  |              |
| 5.  | 200 dollars           |  |              |
| 6.  | 2001 dollars          |  |              |
| 7.  | 30 fire extinguishers |  |              |
| 8.  | 1000 men              |  |              |
| 9.  | 1050 men              |  |              |
| 10. | October 15            |  |              |
| 11. | 15 trees              |  |              |
| 12. | 100 trees             |  |              |
| 13. | Car 124               |  |              |
| 14. | 5000 trees            |  |              |
| 15. | 500 cars              |  |              |
| 16. | 50 minutes            |  |              |
| 17. | 5                     |  |              |

Check by the Answer Book. If you made a mistake read page 90 again.

Then erase and correct your error.

Professional Forest Service operators use the same TIME OF DAY designations as do the military and some other organizations. If you are familiar with these time designations, you may want to try the speed tests on the next two pages. If, on the first or second tries, you can say the correct time designations in the times allowed, you may skip the following section.

If you are *not* familiar with these time designations, *do not* take the speed tests. GO NOW TO PAGE 96 and begin that section.

For this and the next page, it is best that you work with a partner. On this page, your partner should read the AM and PM times on the left. You should say the radio time designations in response, without looking at the book. Your partner should check you and time you. Then you can do the same for your partner, if desired. To skip the next section, you should be able to say correctly these radio time designations within one minute and fifteen seconds, or less - on the first or second try.

If you are alone, you may cover the right side of the page with a piece of paper and slide it down one line at a time to check yourself. Since this takes longer, you are allowed two minutes to say correctly these times - on the first or second try.

*Partner reads this — — — and — — — Checks you by this*

1 PM	— — — — —	13 hundred
1:13 PM	— — — — —	13 - 13
5 PM	— — — — —	17 hundred
1 AM	— — — — —	oh - one hundred
3 AM	— — — — —	oh - three hundred
12 MIDNIGHT	— — — — —	24 hundred
12 NOON	— — — — —	12 hundred
8 PM	— — — — —	20 hundred
5 AM	— — — — —	oh - five hundred
10 PM	— — — — —	22 hundred
4 PM	— — — — —	16 hundred
11 PM	— — — — —	23 hundred
12:01 AM	— — — — —	oh - oh - oh - one
7 PM	— — — — —	19 hundred
2 AM	— — — — —	oh - two hundred
4 AM	— — — — —	oh - four hundred
6 PM	— — — — —	18 hundred
6 AM	— — — — —	oh - six hundred
8 AM	— — — — —	oh - eight hundred
7 AM	— — — — —	oh - seven hundred
9 PM	— — — — —	21 hundred
2 PM	— — — — —	14 hundred
9 AM	— — — — —	oh - nine hundred
3 PM	— — — — —	15 hundred
10 AM	— — — — —	10 hundred
11 AM	— — — — —	11 hundred
8:15 AM	— — — — —	oh - eight - fifteen

Time on first try _____	Time on second try _____
-------------------------	--------------------------

If you did not say correctly the radio time designations in the time allowed, do *not* take the next test. GO NOW TO PAGE 96.

If you *did* say the designations correctly in the time allowed, GO ON TO THE NEXT PAGE.

Do this page with a partner, if possible, just as the preceding page. This time your partner will read the radio time designations, and you will say the regular AM and PM times. To skip the following section, you must be able to say these correctly within one minute and fifteen seconds. If you are alone, allow yourself two minutes.

*Partner reads this — — — and — — — Checks you by this*

17 hundred	— — — — —	5 PM
24 hundred	— — — — —	12 MIDNIGHT
oh-eight hundred	— — — — —	8 AM
15 hundred	— — — — —	3 PM
10 hundred	— — — — —	10 AM
12 hundred	— — — — —	12 NOON
20 hundred	— — — — —	8 PM
oh-five hundred	— — — — —	5 AM
22 hundred	— — — — —	10 PM
16 hundred	— — — — —	4 PM
23 hundred	— — — — —	11 PM
13 hundred	— — — — —	1 PM
oh-five thirty	— — — — —	5:30 AM
oh-one hundred	— — — — —	1 AM
oh-three hundred	— — — — —	3 AM
16 hundred	— — — — —	4 PM
oh-nine hundred	— — — — —	9 AM
14 hundred	— — — — —	2 PM
oh-seven hundred	— — — — —	7 AM
21 hundred	— — — — —	9 PM
oh-six hundred	— — — — —	6 AM
18 hundred	— — — — —	6 PM
oh-four hundred	— — — — —	4 AM
oh-two hundred	— — — — —	2 AM
19 hundred	— — — — —	7 PM
nineteen-fifteen	— — — — —	7:15 PM
oh-oh-oh-eight	— — — — —	12:08 AM

Time on first try \_\_\_\_\_

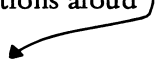
Time on second try \_\_\_\_\_

If you said correctly the time designations in the time allowed, on the first or second try, you may skip pages 96 through 104 and GO DIRECTLY TO PAGE 105 NOW.

If you did not say correctly the time designations, on both pages, on the first or second try, GO NOW TO PAGE 96.

Numbers used for *telling time* are a special case.

Professional Forest Service radio operators use the same TIME OF DAY designations as do the military and other organizations. This system eliminates confusion about AM and PM times. For example, when it is 1 PM, you should say "thirteen hundred." Look over all of this page, then read this column of time designations aloud



1 AM	-----	is written as	- 0100	-----	say	- Oh - one hundred
2 AM	- - - - -		0200	- - -		Oh - two hundred
3 AM	- - - - -		0300	- - -		Oh - three hundred
4 AM	- - - - -		0400	- - -		Oh - four hundred
5 AM	- - - - -		0500	- - -		Oh - five hundred
6 AM	- - - - -		0600	- - -		Oh - six hundred
7 AM	- - - - -		0700	- - -		Oh - seven hundred
8 AM	- - - - -		0800	- - -		Oh - eight hundred
9 AM	- - - - -		0900	- - -		Oh - nine hundred
10 AM	- - - - -		1000	- - -		Ten hundred
11 AM	- - - - -		1100	- - -		Eleven hundred
12 NOON	- - - - -		1200	- - -		Twelve hundred
1 PM	- - - - -		1300	- - -		Thirteen hundred
2 PM	- - - - -		1400	- - -		Fourteen hundred
3 PM	- - - - -		1500	- - -		Fifteen hundred
4 PM	- - - - -		1600	- - -		Sixteen hundred
5 PM	- - - - -		1700	- - -		Seventeen hundred
6 PM	- - - - -		1800	- - -		Eighteen hundred
7 PM	- - - - -		1900	- - -		Nineteen hundred
8 PM	- - - - -		2000	- - -		Twenty hundred
9 PM	- - - - -		2100	- - -		Twenty one hundred
10 PM	- - - - -		2200	- - -		Twenty two hundred
11 PM	- - - - -		2300	- - -		Twenty three hundred
12 MIDNIGHT	- - - - -		2400	- - -		Twenty four hundred

Notice that you just add 12 to the *PM time* to get the first two numbers of the hour as, 8 PM is 20 hundred,  $8 + 12 = 20$ .

Now you write the time designations by the regular times below. The first is done for you.

1AM is	<u>0100</u>
2AM is	<u>                    </u>
3AM is	<u>                    </u>
4AM is	<u>                    </u>
5AM is	<u>                    </u>
6AM is	<u>                    </u>
7AM is	<u>                    </u>
8AM is	<u>                    </u>
9AM is	<u>                    </u>
10AM is	<u>                    </u>
11AM is	<u>                    </u>
12NOON is	<u>                    </u>
1PM is	<u>                    </u>
2PM is	<u>                    </u>
3PM is	<u>                    </u>
4PM is	<u>                    </u>
5PM is	<u>                    </u>
6PM is	<u>                    </u>
7PM is	<u>                    </u>
8PM is	<u>                    </u>
9PM is	<u>                    </u>
10PM is	<u>                    </u>
11PM is	<u>                    </u>
12MIDNIGHT is	<u>                    </u>

Look back at the previous page to check your answers.



Midnight is 2400, the *last* number in the series. One minute past midnight is 0001, say “oh-oh-oh-one”, 15 minutes past midnight is 0015, say “oh-oh-fifteen”. For minutes past the hour leave off the “hundred” and give the number of minutes.

Other examples are: 1:15 AM --- 0115 “oh-one-fifteen”  
2:45 PM --- 1445 “fourteen forty five”

In regular AM and PM times, remember:


From NOON to MIDNIGHT is PM.

From MIDNIGHT to NOON is AM.

One minute after midnight is 12:01 AM, written as 0001.

Look over the table below:

Midnight + 1 minute ---	12:01AM ---	0001
Midnight + 30 minutes -	12:30AM ---	0030
	1:00AM ---	0100
	1:30AM ---	0130
	2:00AM ---	0200
	.	.
	.	.
	.	.
	12NOON ---	1200
Noon + 1 minute ---	12:01PM ---	1201
	1:00PM ---	1300
	1:30PM ---	1330
	.	.
	.	.
	.	.
	12MIDNIGHT ---	2400
	one minute past midnight	



The times below are not in order. Write the correct radio time designations for the regular AM and PM times below:

3:30PM is _____	12:45PM is _____
1PM is _____	11PM is _____
12MIDNIGHT is _____	4AM is _____
12NOON is _____	8PM is _____
7PM is _____	8AM is _____
7AM is _____	11AM is _____
7:54AM is _____	12:15AM is _____

Check by the Answer Pages.

This time you write the AM and PM regular times beside the radio time designations below. The first is done for you.

If you do not remember the time designation for the numbers beyond 1200 you can subtract 12 from the first two numbers, as,  $16 - 12 = 4\text{PM}$ .

0050 is 12:50 AM

1230 is \_\_\_\_\_

2400 is \_\_\_\_\_

1800 is \_\_\_\_\_

1200 is \_\_\_\_\_

1920 is \_\_\_\_\_

1450 is \_\_\_\_\_

2300 is \_\_\_\_\_

1600 is \_\_\_\_\_

2000 is \_\_\_\_\_

1100 is \_\_\_\_\_

2200 is \_\_\_\_\_

1300 is \_\_\_\_\_

1700 is \_\_\_\_\_

1500 is \_\_\_\_\_

2135 is \_\_\_\_\_

0130 is \_\_\_\_\_

0800 is \_\_\_\_\_

0900 is \_\_\_\_\_

0600 is \_\_\_\_\_

1000 is \_\_\_\_\_

0740 is \_\_\_\_\_

0200 is \_\_\_\_\_

0400 is \_\_\_\_\_

0201 is \_\_\_\_\_

1441 is \_\_\_\_\_

0315 is \_\_\_\_\_

0500 is \_\_\_\_\_

1145 is \_\_\_\_\_

1313 is \_\_\_\_\_

Check by the Answer Pages.

Now write the radio time designations beside the times below.

12:15PM	_____	12:59AM	_____
1PM	_____	12 NOON	_____
3PM	_____	1PM	_____
5PM	_____	5PM	_____
7:30PM	_____	8PM	_____
9PM	_____	10:10PM	_____
11PM	_____	9PM	_____
2PM	_____	7PM	_____
4PM	_____	2PM	_____
6PM	_____	3:45PM	_____
8PM	_____	6:50PM	_____
10PM	_____	11PM	_____
12MIDNIGHT	_____	4PM	_____
12:01AM	_____	4:16PM	_____

Check by the Answer Pages.

Once again, you write the regular AM or PM times beside the radio time designations below.

1200 \_\_\_\_\_

1400 \_\_\_\_\_

1600 \_\_\_\_\_

1800 \_\_\_\_\_

2000 \_\_\_\_\_

2200 \_\_\_\_\_

2400 \_\_\_\_\_

1100 \_\_\_\_\_

1300 \_\_\_\_\_

1500 \_\_\_\_\_

1700 \_\_\_\_\_

1900 \_\_\_\_\_

2100 \_\_\_\_\_

2300 \_\_\_\_\_

0100 \_\_\_\_\_

0300 \_\_\_\_\_

0500 \_\_\_\_\_

0200 \_\_\_\_\_

0400 \_\_\_\_\_

1000 \_\_\_\_\_

1001 \_\_\_\_\_

0001 \_\_\_\_\_

0010 \_\_\_\_\_

2000 \_\_\_\_\_

1200 \_\_\_\_\_

2400 \_\_\_\_\_

0600 \_\_\_\_\_

1000 \_\_\_\_\_

1100 \_\_\_\_\_

1800 \_\_\_\_\_

1300 \_\_\_\_\_

1700 \_\_\_\_\_

1500 \_\_\_\_\_

2100 \_\_\_\_\_

2300 \_\_\_\_\_

0100 \_\_\_\_\_

2200 \_\_\_\_\_

1900 \_\_\_\_\_

1600 \_\_\_\_\_

1400 \_\_\_\_\_

0900 \_\_\_\_\_

2100 \_\_\_\_\_

1700 \_\_\_\_\_

0059 \_\_\_\_\_

1259 \_\_\_\_\_

0100 \_\_\_\_\_

Check by the Answer Pages.

For this and the next page you will need to work with a partner. On this page, your partner should read the AM and PM times on the left. You should say the radio time designations in response, without looking at the book. Your partner should check you and time you. Then you can do the same for your partner, if desired. You should both continue until you can say correctly these radio time designations within one minute and fifteen seconds, or less. If you are alone, you may check and time yourself. Cover the right side of the page with a piece of paper and slide it down one line at a time to check yourself. Since this takes longer, you may stop when you can say correctly (and check) these in two minutes, or less.

<i>Partner reads this</i>	<i>and</i>	<i>Checks you by this</i>
1PM	— — — — —	13 hundred
1:13PM	— — — — —	13 - 13
5PM	— — — — —	17 hundred
1AM	— — — — —	oh - one hundred
3AM	— — — — —	oh - three hundred
12MIDNIGHT	— — — — —	24 hundred
12NOON	— — — — —	12 hundred
8PM	— — — — —	20 hundred
5AM	— — — — —	oh - five hundred
10PM	— — — — —	22 hundred
4PM	— — — — —	16 hundred
11PM	— — — — —	23 hundred
12:01AM	— — — — —	oh - oh - oh - one
7PM	— — — — —	19 hundred
2AM	— — — — —	oh - two hundred
4AM	— — — — —	oh - four hundred
6PM	— — — — —	18 hundred
6AM	— — — — —	oh - six hundred
8AM	— — — — —	oh - eight hundred
7AM	— — — — —	oh - seven hundred
9PM	— — — — —	21 hundred
2PM	— — — — —	14 hundred
9AM	— — — — —	oh - nine hundred
3PM	— — — — —	15 hundred
10AM	— — — — —	10 hundred
11AM	— — — — —	11 hundred
8:15AM	— — — — —	oh - eight - fifteen

Time: \_\_\_\_\_  
 \_\_\_\_\_

Do this page with a partner, just as you did the previous page. This time, the one reading will read the radio time designations, and the other should say the regular AM and PM times. Continue until you can do this list within one minute and fifteen seconds. If you are alone, allow yourself two minutes, as on the previous page.

<i>Partner reads this</i>	<i>and</i>	<i>Checks you by this</i>
17 hundred	— — — — —	5PM
24 hundred	— — — — —	12MIDNIGHT
oh-eight hundred	— — — — —	8AM
15 hundred	— — — — —	3PM
10 hundred	— — — — —	10AM
12 hundred	— — — — —	12NOON
20 hundred	— — — — —	8PM
oh-five hundred	— — — — —	5AM
22 hundred	— — — — —	10PM
16 hundred	— — — — —	4PM
23 hundred	— — — — —	11PM
13 hundred	— — — — —	1PM
oh-five thirty	— — — — —	5:30AM
oh-one hundred	— — — — —	1AM
oh-three hundred	— — — — —	3AM
16 hundred	— — — — —	4PM
oh-nine hundred	— — — — —	9AM
14 hundred	— — — — —	2PM
oh-seven hundred	— — — — —	7AM
21 hundred	— — — — —	9PM
oh-six hundred	— — — — —	6AM
18 hundred	— — — — —	6PM
oh-four hundred	— — — — —	4AM
oh-two hundred	— — — — —	2AM
19 hundred	— — — — —	7PM
nineteen-fifteen	— — — — —	7:15PM
oh - oh - oh - eight	— — — — —	12:08AM

Time: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



Unless you plan to continue for another hour or more, stop here.

Also, like the military, the words AFFIRMATIVE and NEGATIVE should be used instead of *yes* and *no*. Aircraft pilots also use affirmative and negative because these words are more easily understood when receiving conditions are marginal.

Other good radio practices are:

1. When one transmission lasts over *30 seconds*, the transmitter (you) should say "break", wait for acknowledgment of reception, then pause for ten seconds. This confirms the reception of your transmission and allows for interruption, if needed, by emergency traffic. Examples of transmissions which might last over 30 seconds are reading a supply list or giving payroll information. (Under usual circumstances you would not talk without stopping for 30 seconds.) If you are *receiving* a long transmission and the transmitter says "break" you should answer, then stand by until he continues the transmission. Remember, when your push-to-talk button is pushed in, you cannot receive messages. If the person you are calling could not hear you, or if someone were trying to report a fire while you were talking, you would not be aware of any attempt to interrupt you.
2. When you are receiving a message which you are to repeat to another person, you should *write the message*, then *read* the message to that third person. This eliminates unconsciously changing the meaning of the original message - as often happens when you repeat a message from one person to the next.
3. When the message you wish to send is complex, you should carefully write it out before you send it, then *read* it on the radio. This should help keep the message clear, concise and complete.



Write the answers. Look back at the previous page only if you cannot remember.

1. On the radio, when your answer to a question is YES, you should say \_\_\_\_\_ .
2. When your answer to a question is NO, you should say \_\_\_\_\_ .
3. When you are transmitting a long list, or other information which requires over 30 seconds of constant transmission, what should you do? \_\_\_\_\_  
Why? \_\_\_\_\_
4. Can you hear other transmissions when your push-to-talk button is pushed in? \_\_\_\_\_
5. When you *hear* the word "break," what should you do? \_\_\_\_\_
6. When you are receiving a message *for someone else*, what should you do as you receive it? \_\_\_\_\_
7. When you have a complex message to transmit, what should you do before you transmit it? \_\_\_\_\_

Check by the Answer Pages.

Occasionally *letters* may become garbled in transmission. For example, a “c” may sound like a “t”. Because of this problem, there are at least two major types of phonetic alphabets in use today and a new one is proposed.

Since these alphabets are rarely needed in most Forest Service usage, they will not be taught in this course. If you need to clarify letters in your radio transmission, use a word which begins with that letter and one which is easily understood. For example, “c” as in Charley, or “t” as in “Tango” or “Tom”.

Your work supervisor will tell you if you need to learn a phonetic alphabet.

Below are *conversational* messages. You “translate” each one into a professional radio message. *Write* the radio message for each. Be sure to use the 10-code whenever possible. Remember the numbers, and time designations. In every possible way - be *brief*, *clear*, *concise*, and *complete*.

<i>Conversational Message</i>	<i>Radio Message</i>
1. The correct time is 4:00 PM.	_____
2. YES	_____
3. We need part number 002T.	_____
4. NO	_____
5. I've been talking for thirty seconds so I'm going to break now and wait for ten seconds. You stand by.	_____

*Conversational Message*

*Radio Message*

6. At 9 o'clock tonight I  
will be out of service  
at home, but you can  
call me on the phone if  
you need me.
7. I count 47 horses in  
the valley.
8. My location is 38 miles  
south of Cresthill.
9. What is the fire doing now?
10. It is now one minute past  
midnight.
11. Ten men have arrived at the scene.

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Check and correct by the Answer Pages.

TO BEGIN A MESSAGE, you should first state the designation of the *person you are calling*, then *your designation* (or call sign).




Then:

TO END THE MESSAGE, you should wait for acknowledgment of your message and the other person's designation (or call sign). Then give *your designation* again at the end.

When you are *called*, answer with your designation. When you have received and understood the message, acknowledge it and give your designation to sign off at your end.

See this in the example below.

Patrolman (Car 23) reporting to Dispatcher (Control) on occupancy of camp ground.

<i>Car 23</i>		<i>Control</i>
"Control, Car two-three"		"Control"
"Advise the recreation staff man that Jones Creek Camp Ground has four-three full units and one-seven empty at this time."		"Ten-four, two-three. What about Smith Creek Camp Ground?"
"I'll be there in thirty minutes and will report then."		"Ten-four, K M E two-five." (Station designation)
"Car two-three"	END	

Imagine that you are Car four-seven. (That is your designation.) You want to call the central dispatcher. Call him "Control". You want to make a routine check in. Control says "Negative" to indicate there are no instructions or messages for you. You both sign off. The station designation is K M E 25. You write what you should say *and* what he should say. Refer to the opposite page if you need to.

*YOU*  
*(Car four-seven)*  
*Write what you would say.*



*Control*  
*Write what he would say.*



Check by the Answer Pages.

— Note —

When you are in communication, it is not necessary to repeat the caller's designation and your designation with each new transmission. You will have to use your own judgment and common sense in many cases. These designations, codes, etc., are all designed to help you communicate clearly and briefly. Keep this in mind.

Write the correct radio transmissions asked for below:

1. (a) You are Car 47 calling Car 82 directly.

Write what you would say to call him:

---

- (b) Write what he should answer:

---

2. . You are Car 47. You have received and understood a message from the dispatcher - "Control." Write what you would say:

---

3. *You* are the dispatcher - "Control." You want to call the man at Rocky Peak and ask him to turn on the repeater. Write how you would call him, and how you would ask him to turn on the repeater. Write how he should answer. (In this case, Rocky Peak might best acknowledge the message by repeating it.)

*You*

*Rocky Peak*

---

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4. The situation is the same as in 3, except that you have completed your message on channel 2 through the repeater. Write what you would say to Rocky Peak now, and how he might answer.

*You*

*Rocky Peak*

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Check by the Answer Pages.

When someone is hurt or a fire is reported, you should not use the air while messages concerning those events may be transmitted.

Specific priorities for use of air time are - *in this order*:

1. Death, Injury, Medical Aid
2. Reporting a Fire for the *First Time*
3. Sending the First Man or Crew to a New Fire
4. Other Fire Information
5. Administrative and Routine

When a disaster involving death or injury is occurring or is about to occur, such as in an airplane about to crash - or being closed in by fire, the person involved should break in with the word "MAYDAY". If possible, he should give his name, his location and describe the situation. If you should receive a mayday signal you should, of course, leave the air free of other traffic so that messages concerning that situation can be transmitted.

The second, in order of priority, is Reporting a Fire for the *First Time*. The words "FIRE FLASH" are used only to *report the fire*. If you spot a fire which has not been reported - a new fire - you should say "FIRE FLASH" and give the location of the fire.

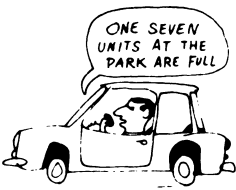

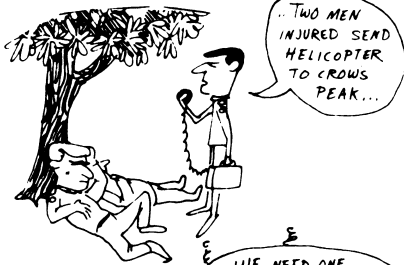


Sending the First Man or Crew to the New Fire is the third most important.

Other Fire Information is fourth.

All administrative and routine messages should stop when messages concerning death, injury, or fire are being transmitted.



The sketches below represent events. Number them in order of their priority for use of radio time. Use the number 1 for the highest priority, 2 for the next highest, etc.

<p>_____</p> <p>(fill in)</p>	
<p>_____</p> <p>(fill in)</p>	
<p>_____</p> <p>(fill in)</p>	
<p>_____</p> <p>(fill in)</p>	
<p>_____</p> <p>(fill in)</p>	

Check by the Answer Pages.

Write the answers to these questions:

1. If you are in a disaster situation involving death or injury, what word would you say on the radio? \_\_\_\_\_
2. After that word (in 1 above) what else should you say if possible?  
\_\_\_\_\_
3. What words should you use in reporting a new fire?  
\_\_\_\_\_
4. If messages concerning a new fire are being transmitted and you come upon a wreck in which a person is hurt, should you break into the fire transmissions to get help? \_\_\_\_\_
5. If men are being dispatched to an "old" fire, should you use the radio to ask for a weather report? \_\_\_\_\_
6. If you are transmitting messages from the site of a fire which has already been reported, should you leave the air when you hear the words, "Fire Flash"? \_\_\_\_\_
7. Which has the greatest priority for air time, dispatching additional men to a fire, or dispatching the first crew to a new fire?  
\_\_\_\_\_

Check and correct by the Answer Pages.

To hear Fire Flashes and receive other important calls, your radio must be on, of course. When it is not possible for you to be by your radio all the time, you should follow your routine check in schedule, if you have one. If you do not have a regular schedule for checking in, or in unusual circumstances, you must use your own judgment. For example, if it is a hot day and has not rained in a long time, the conditions are probably ripe for fire. You might check in more often on days like that.

## NOTE

When the dispatcher or a supervisor needs to give the same information to more than one person he may call all involved at one time.

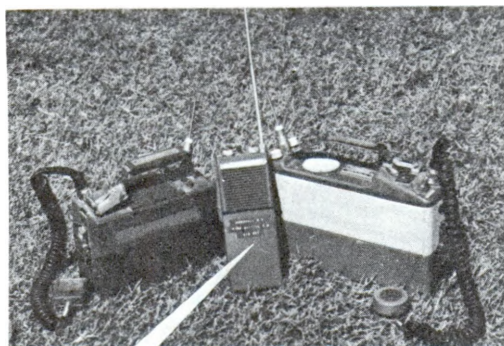
This is called a net message. The persons called should all answer in the *order in which they are called*. At the end of the transmission, each should sign off in the same order. This order is usually determined in advance and stays the same.

The next few pages are a review of what you have learned in this program. If you have not taken a short break within the last 20 minutes, take one now, before you go on. Do *not* stop here for the day unless you are certain that you can continue with this program *tomorrow*.

Write the answers to all of the questions before you check any of your answers.

Do not look back to previous pages until you have finished.

1.



These radio units are called \_\_\_\_\_.

2. This one is called a \_\_\_\_\_.

3.



This radio is a \_\_\_\_\_ unit.

4.



This is a \_\_\_\_\_ radio in the dispatcher's office.

Go on to the next page.

5. The Forest Service radios *transmit* on channel(s) \_\_\_\_\_ .
  6. The Forest Service radios *receive* channel(s) \_\_\_\_\_ .
  7. To *transmit* through a repeater you broadcast on channel \_\_\_\_\_ .
  8. You *receive* a message through a repeater on channel \_\_\_\_\_ .
  9. Describe the steps involved in preparing a portable (other than personal portable) for operation. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
  10. Describe the steps involved in preparing a personal portable for operation. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
  11. Describe the steps involved in preparing most mobile units for operation. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
  12. What do you do with the mike to leave a portable (other than personal portable) on standby? \_\_\_\_\_  
\_\_\_\_\_
  13. What do you do to the other radios to keep them on standby? \_\_\_\_\_
  14. On any radio, what should you do before transmitting? \_\_\_\_\_
- Go on to the next page.

15. What do you do to the mike so that your message will be transmitted?

---

16. How should you hold the mike to your mouth?

---

ON THE LINE UNDER EACH MESSAGE BELOW, *TELL WHY EACH ONE IS A BAD MESSAGE:*

17. "I think the fire was started by the train."

---

18. "Are you going to the Lodge meeting tonight?"

---

19. "The woods are too \*#d%\$\*% dry."

---

20. "Jones, will you please send another truck? I'd appreciate it very much."

---

21. "Joe -----(pause)----- ten-thirteen and --(pause)----- ten-thirty six."

---

22. "I'm going to be out of service at home soon, but I'll be available. If you or any of the boys need me, just call."

---

Go on to the next page.

23. Number these in order of greatest priority for radio use. The most important as 1, next as 2, etc. on to 5.

\_\_\_\_\_ Administrative and routine

\_\_\_\_\_ Dispatching first crew to new fire

\_\_\_\_\_ First report of new fire

\_\_\_\_\_ Other fire information

\_\_\_\_\_ Injury, death, or need for medical attention

24. When reporting a new fire, you should use these words:

\_\_\_\_\_

25. When in a disaster situation, such as being closed in by fire or on a plane about to crash, what word should you transmit first?

\_\_\_\_\_

26. Write these numbers and phrases as you would *say* them on the radio:

(a) November first                      →                      \_\_\_\_\_

(b) 220 cars                                →                      \_\_\_\_\_

(c) 3000 trees                              →                      \_\_\_\_\_

(d) 10-44 (code signal)                →                      \_\_\_\_\_

(e) Car 81                                    →                      \_\_\_\_\_

(f) K M B 25                                →                      \_\_\_\_\_

(g) 100 trees                                →                      \_\_\_\_\_

(h) 30 minutes                              →                      \_\_\_\_\_

27. When you are to relay a message, what should you do while you are receiving the message? \_\_\_\_\_

28. Generally, when you begin a message, what information do you transmit first?

\_\_\_\_\_

29. Generally, how do you end a message?

\_\_\_\_\_

Go on to the next page.



30. When and how should you pause in the middle of a long transmission?

\_\_\_\_\_

31. Why should you pause? (see 30 above)

\_\_\_\_\_

32. When you receive a message, how can you tell whether or not it is  
coming through a repeater? \_\_\_\_\_

\_\_\_\_\_

33. When you receive a message via a repeater, you should answer on  
channel \_\_\_\_\_ .

34. When should you say “over” or “clear” at the end of a transmission?

\_\_\_\_\_

35. On the radio, the word used to indicate *yes* or *correct* is

\_\_\_\_\_ .

36. The word used to indicate *no* or *wrong* is \_\_\_\_\_ .

Go on to the next page.

37. Write the radio time designations beside the regular AM and PM times  
below:

1 AM _____	10 AM _____
2 PM _____	6 PM _____
12 NOON _____	11 AM _____
1 PM _____	11 PM _____
9 PM _____	5 PM _____
4 AM _____	12:15 AM _____
7 PM _____	1:20 AM _____
12 MIDNIGHT _____	10:30 PM _____
3 PM _____	12:15 PM _____
8 PM _____	4:45 PM _____
8 AM _____	12:01 AM _____
4 PM _____	12:01 PM _____
10 PM _____	10:10 AM _____
	4:16 PM _____

Go on to the next page.

38. For the last time, write the meanings of the 10-code signals below.

- 10-1 \_\_\_\_\_
- 10-2 \_\_\_\_\_
- 10-3 \_\_\_\_\_
- 10-4 \_\_\_\_\_
- 10-5 \_\_\_\_\_
- 10-6 \_\_\_\_\_
- 10-7 \_\_\_\_\_
- 10-8 \_\_\_\_\_
- 10-9 \_\_\_\_\_
- 10-10 \_\_\_\_\_
- 10-11 \_\_\_\_\_
- 10-13 \_\_\_\_\_
- 10-19 \_\_\_\_\_
- 10-20 \_\_\_\_\_
- 10-22 \_\_\_\_\_
- 10-25 \_\_\_\_\_
- 10-33 \_\_\_\_\_
- 10-36 \_\_\_\_\_
- 10-39 \_\_\_\_\_
- 10-40 \_\_\_\_\_
- 10-43 \_\_\_\_\_
- 10-44 \_\_\_\_\_
- 10-49 \_\_\_\_\_
- 10-71 \_\_\_\_\_
- 10-72 \_\_\_\_\_
- 10-86 \_\_\_\_\_
- 10-97 \_\_\_\_\_

Check all your answers on pages 118 - 124 by the Answer Pages. Correct any error and be sure you understand any correction. Review any of the previous pages which you need.



Unless you plan to continue for at least an hour or more, stop here.

---

---

## SAFETY

In using radios, as in all other aspects of forestry, SAFETY is always an important consideration.

SAFETY precautions to be observed in connection with the radios are presented in the *Forest Service Health and Safety Code Booklet*.

Remember *where* to find this important information.

Pages from that booklet are shown on the next page. Read them thoroughly now.

## SAFETY PRECAUTIONS CONCERNING RADIO USE

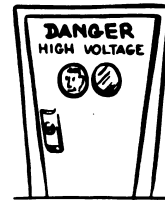


### 6.2 RADIO AND TELEPHONE

#### 6.21 RADIO

(1) Because of the high voltages in certain circuits, only radio technicians or others specially instructed **SHALL** be allowed access in AC-powered equipment.

a. AC cabinet **SHALL** be locked, and the key **SHALL** be available only to radio technicians or others specially instructed and authorized.



(2) During lightning storms, operator **SHALL**--

HSC 3.42  
3.43

a. Never use any radio except from within a rubber tired vehicle if storm is within 1 mile.

b. Extend antenna on back-pack set only when storm is over a mile away.

(3) A radio transmitter **SHALL** NOT be used within 300 feet of any electric blasting or areas where electric detonators are handled or stored.



HSC 6.14

(4) Insulating platforms or rubber mats **SHALL** be provided in radio repair shops.

(5) See Lightning Protection Handbook, p. 10, for installation of broadcast receivers in lookout towers.



5651.63b

(6) Whip antennas **SHALL** be provided with safety knob, closed loops, or other protective device to prevent injury when not extended.

(7) Technicians **SHALL** be physically well qualified and specifically trained before climbing in high places.

(8) At least two men, when practicable, **SHALL** be present during work on high-powered transmitters, or when climbing towers and poles.

## ROLE PLAY

During this last part of the program you will use what you have learned. You will communicate “on the radio” with a partner, if possible. Transmissions may be monitored by a third person who will be checking you on proper use of the code, times, numbers, and all of the other aspects of professional, effective radio use which you have learned. If there is no third person to check you, you can check each other by the “correct” transmissions and check lists given in this manual. If you are alone, you may take both parts and check yourself.

Note: If free air time is available, you should actually *use* your radios.

Check with your work supervisor, if he has not already advised you in this respect.

Now, select a partner. Each page contains a "script" with two parts, part A and part B. You take one part and your partner takes the other. If it is impossible for you to work with a partner you may take both parts, then check yourself. The "script" (your parts) are written in "everyday language". You must *translate* these into good radio communications. Leave out all unnecessary words, use the code wherever possible, and remember to *use* all that you have learned.

Your rate may be slow at first but should pick up as you become accustomed to radio communication.

Decide which of you will take the A part and which will take the B part for the first communication. The A part is the part of the caller. The "A" partner transmits the first message, then waits for the "B" answer - then "A", "B", etc.

Read over the "script" now. Then when you are both ready - begin —————>

# TAPE QUESTIONS

(Car 23)  
PART A

(Control at Station KMB 77)  
PART B

A  
starts

This is Car 23 calling  
Control.  
Will you please give me  
the weather report?

OK, Car 23, Control here.

The latest report is:  
dry bulb 95, wet bulb 67,  
relative humidity 22, wind  
west 5, fuel moisture 6.

I lost you on the wind.  
Will you repeat beginning  
with the wind speed?

Sure - OK - That was wind  
west 5, fuel moisture 6.

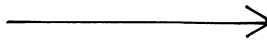
OK, I have it all now,  
thanks. Signing off.

Roger - signing off.

Remember what you said, and check by the next page →



THIS IS NOT A "SCRIPT"

Recall your transmission and compare it with these "correct" messages.  
 Unless otherwise instructed, use this check list  to indicate errors.

<p>(Car 23) PART A</p>	<p>(Control at Station KMB 77) PART B</p>
<p>"Control, Car two-three, ten-thirteen."</p>	<p>"Control. Dry bulb nine-five, wet bulb six-seven, relative humidity two-two, wind west five, fuel moisture six."</p>
<p>"Ten-nine the wind."</p>	<p>"Wind west five, fuel moisture six."</p>
<p>"Ten-four, Car two-three."</p>	<p>"KMB seven-seven"</p>

The check list on the next page corresponds block for block with the messages here.

## CHECK LIST

Put a check in the block for each "yes" answer.

<i>PART A</i>	<i>PART B</i>
<input type="checkbox"/> "Control," or "Car two-three" omitted or in reverse order? <input type="checkbox"/> Code not used or incorrect code? <input type="checkbox"/> Unneeded words?	<input type="checkbox"/> Answered with word other than "Control"? <input type="checkbox"/> Number expressed incorrectly? <input type="checkbox"/> Unneeded words?
<input type="checkbox"/> Code not used or incorrect code? <input type="checkbox"/> Unneeded words?	<input type="checkbox"/> Unneeded words?
<input type="checkbox"/> 10-4 omitted? <input type="checkbox"/> "Car two-three" omitted or said as "twenty three"?	<input type="checkbox"/> Incorrect sign off? <input type="checkbox"/> Incorrect <i>number</i> use? (as seventy seven) <input type="checkbox"/> Unneeded words?
Number of errors for A (yesses) _____	Number of errors for B (yesses) _____
For Monitor's Use When Needed  Monitor's Comments:	For Monitor's Use When Needed  Monitor's Comments:

Again, chose Part A or B. You and your partner translate the messages into good radio transmissions, *as you transmit them to each other.*

(Car 23)  
PART A

(Car 38)  
PART B

A  
starts

This is Car 23 calling  
38.

This is Car 38, what is your  
message?

I was wondering if you had  
part number 470 for the  
grading machine?

Yes, I have that part.

Please take that part and  
proceed to the construction  
at Rocky Peak.

OK, I'll be there at  
4 PM.

Good. This is Car 23  
signing off.

Car 38 signing off.

Remember your transmission and compare it with that on the next page.

Unless otherwise instructed, use this check list to indicate errors →

<p>(Car 23) <i>PART A</i></p> <p>“Car three-eight, Car two-three.”</p>	<p>(Car 38) <i>PART B</i></p> <p>“Three-eight” or  (“Car three-eight”)</p>
<p>“Do you have part number four-seven-zero for the grading machine?”</p>	<p>“Affirmative”</p>
<p>“Take the part and ten-forty nine the construction at Rocky Peak.”</p>	<p>“Ten-four. I’ll be there at 16 hundred.”</p>
<p>“Ten-four, Car two-three.”</p>	<p>“Three-eight” or  (“Car three-eight”)</p>

## CHECK LIST

Put a check in the block for each "yes" answer.

<i>PART A</i>	<i>PART B</i>
<input type="checkbox"/> "Car three-eight" or "Car two-three" omitted or in reverse order? <input type="checkbox"/> Numbers incorrectly expressed? (as <i>thirty</i> eight) <input type="checkbox"/> Unneeded words?	<input type="checkbox"/> Numbers incorrectly expressed? (as <i>thirty</i> eight) <input type="checkbox"/> Unneeded words?
<input type="checkbox"/> Numbers incorrectly expressed? <input type="checkbox"/> Unneeded words?	<input type="checkbox"/> Word other than affirmative, or code, used? <input type="checkbox"/> Unneeded words?
<input type="checkbox"/> Code omitted or incorrectly used? <input type="checkbox"/> Unneeded words?	<input type="checkbox"/> Code omitted or incorrectly used? <input type="checkbox"/> Time incorrectly expressed? <input type="checkbox"/> Unneeded words?
<input type="checkbox"/> Incorrect sign off? <input type="checkbox"/> Unneeded words?	<input type="checkbox"/> Incorrect sign off? <input type="checkbox"/> Unneeded words?
Number of errors for A (yesses)      _____	Number of errors for B (yesses)      _____


**For Monitor's Use  
When Needed**

**Monitor's Comments:**

**For Monitor's Use  
When Needed**

**Monitor's Comments:**

Continue in the same way with the next transmission —————>

<p>(Control, Station KME 25) PART A</p> <div data-bbox="105 286 225 357" style="border: 1px solid black; padding: 2px; display: inline-block;">A starts</div>  <p>Calling Rock Creek. Calling Rock Creek. This is Control.</p>	<p>(Rock Creek Ranger Station) PART B</p> <p>OK Control - this is Rock Creek, go ahead.</p>
<p>Can you get Ed Jones to the radio please?</p>	<p>Just a minute, I'll see. Stand by. (pause) No, Jones is at home, subject to call.</p>
<p>OK, can Bill Smith come to the radio?</p>	<p>No, Smith is out of service. He will be back in service at 3 PM.</p>
<p>OK, I have the message. Signing off.</p>	<p>Roger - Rock Creek, over and out.</p>

Remember your transmission and compare it with that on the next page —————>



Unless otherwise instructed, use this check list to indicate errors —————>

(Control, Station KME 25) <i>PART A</i>	(Rock Creek Ranger Station) <i>PART B</i>
"Rock Creek, Control."	"Rock Creek"
"Ten-thirty nine Ed Jones?"	"Ten-six" (pause) "Negative, Jones is ten-ten."
"Ten-four. Ten-thirty nine Bill Smith?"	"Negative, Smith is ten-seven until fifteen hundred."
"Ten-four. KME two-five"	"Rock Creek"

## CHECK LIST

Put a check in the box for each "yes" answer.

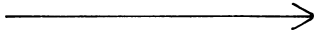
<i>PART A</i>	<i>PART B</i>
<input type="checkbox"/> "Rock Creek" or "Control" omitted or in reverse order? <input type="checkbox"/> Unneeded words?	<input type="checkbox"/> "Rock Creek" omitted? <input type="checkbox"/> Unneeded words?
<input type="checkbox"/> Code omitted or incorrect code? <input type="checkbox"/> Unneeded words?	<input type="checkbox"/> Codes omitted or incorrect codes? <input type="checkbox"/> "Negative" omitted?
<input type="checkbox"/> Codes omitted or incorrect codes? <input type="checkbox"/> Unneeded words? <input type="checkbox"/> Unnecessary pauses?	<input type="checkbox"/> Code omitted or incorrect code? <input type="checkbox"/> Time incorrectly expressed? <input type="checkbox"/> Unnecessary pauses?
<input type="checkbox"/> Incorrect sign off? <input type="checkbox"/> Unneeded words?	<input type="checkbox"/> Incorrect sign off? <input type="checkbox"/> Unneeded words?
Number of errors for A (yesses) _____	Number of errors for B (yesses) _____

**For Monitor's Use  
When Needed**

**Monitor's Comments:**

**For Monitor's Use  
When Needed**

**Monitor's Comments:**

Continue in the same way with this one 

A  
starts



(Car 47)  
PART A

This is Car 47 calling Rock  
Creek.  
Do you read me Rock Creek?  
Over.

(Rock Creek Ranger Station)  
PART B

Rock Creek to Car 47

Will you ask Jones Lumber  
Company to make a \$20,000  
deposit before June 30th?  
That's Wednesday, I think.

Will you repeat that  
beginning with the amount  
of deposit?

Yes, I said: \$20,000  
deposit before  
June 30th.

OK, will do.  
Rock Creek over and out.

Car 47 going off the air.

Remember your transmission and compare it with that on the next page. —————>

Unless otherwise instructed, use this check list to indicate errors →

(Car 47) <i>PART A</i>	(Rock Creek Ranger Station) <i>PART B</i>
"Rock Creek, Car four-seven."	"Rock Creek"
"Ask Jones Lumber Company to make a twenty thousand dollar deposit before June thirty."	"Ten-nine the amount of deposit."
"Twenty thousand dollar deposit before June thirty."	"Ten-four. Rock Creek."
"Car four-seven."	

## CHECK LIST

Put a check in the box for each "yes" answer.

<i>PART A</i>	<i>PART B</i>
<input type="checkbox"/> "Rock Creek" or "Car four-seven" omitted or incorrectly said? <input type="checkbox"/> Unneeded words?	<input type="checkbox"/> "Rock Creek" omitted? <input type="checkbox"/> Unneeded words?
<input type="checkbox"/> Date, June thirty, incorrectly expressed? <input type="checkbox"/> Amount "twenty thousand" incorrectly expressed? <input type="checkbox"/> Unneeded words?	<input type="checkbox"/> Code omitted or incorrect code? <input type="checkbox"/> Code incorrectly used? (as in 10-9 <i>starting with the - - -</i> ) <input type="checkbox"/> Unneeded words?
<input type="checkbox"/> Date incorrectly expressed? <input type="checkbox"/> Unneeded words?	<input type="checkbox"/> Code omitted or incorrect code? <input type="checkbox"/> "Rock Creek" omitted? <input type="checkbox"/> Unneeded words?
<input type="checkbox"/> Incorrect sign off?	
Number of errors for A _____	Number of errors for B _____

For Monitor's Use  
When Needed

Monitor's Comments:

For Monitor's Use  
When Needed

Monitor's Comments:

Continue in the same way with the next transmission —————>

(Red Rock Ranger Station)

*PART A*

This is Red Rock calling  
Control. I've just spotted  
a fire!

(Control, Station KME 25)

*PART B*

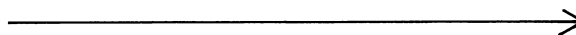
Red Rock, this is Control.

Thin blue smoke is coming  
at azimuth 219 over  
Gillette Peak.

To be sure I have it correct:  
thin blue smoke from azimuth 219  
over Gillette Peak.  
I'll sign off in a hurry so I  
can dispatch men. Station KME 25.

"Red Rock over and out."

Remember, and compare as usual





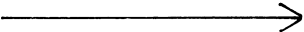
Unless otherwise instructed, use this check list to indicate errors —————>

(Red Rock Ranger Station) <i>PART A</i>	(Control, Station KME 25) <i>PART B</i>
"Control. Red Rock. Fire Flash."	"Control"
"Thin blue smoke at azimuth two-one-nine over Gillette Peak."	"Thin blue smoke at two-one-nine over Gillette Peak. KME two-five."
"Red Rock."	

## CHECK LIST

Put a check in the box for each "yes" answer.

<i>PART A</i>	<i>PART B</i>
<input type="checkbox"/> "Control" or "Red Rock" omitted or in reverse order? <input type="checkbox"/> "Fire Flash" omitted?	<input type="checkbox"/> "Control" omitted? <input type="checkbox"/> Unneeded words?
<input type="checkbox"/> Number expressed incorrectly? <input type="checkbox"/> Unneeded words?	<input type="checkbox"/> Number expressed incorrectly? <input type="checkbox"/> Unneeded words? <input type="checkbox"/> Incorrect sign-off?
<input type="checkbox"/> Incorrect sign-off?	
Number of errors for A      _____	Number of errors for B      _____
<div style="text-align: center; margin-bottom: 10px;">                         For Monitor's Use When Needed                     </div> Monitor's Comments:	<div style="text-align: center; margin-bottom: 10px;">                         For Monitor's Use When Needed                     </div> Monitor's Comments:

Continue 

<p>Fire fighter at fire in <i>Sector A</i> with portable radio <i>PART A</i></p>	<p>Jones, fire fighter, at another part of fire with portable radio <i>PART B</i></p>
<p>Calling Jones. This is Sector A.</p>	<p>Jones speaking. What do you want, Sector A?</p>
<p>You have a spot fire to the north of your line about a quarter mile below Gobbler's Knob.</p>	<p>I'm receiving your message very poorly. I can hardly hear you. Will you repeat the whole message?</p>
<p>Can you hear me now?</p>	<p>Yes, the transmission is clear now.</p>
<p>Like I was saying, you have a spot fire to the north of your line about a quarter mile below Gobbler's Knob, and if you don't get to it it's going to spread. That is all.</p>	<p>OK. This is Jones signing off.</p>
<p>Sector A</p>	

Remember and compare, as usual. —————>

Unless otherwise instructed, use this check list to indicate errors —————>

(Sector A of Fire) <i>PART A</i>	(Jones, at Fire) <i>PART B</i>
"Jones. Sector A."	"Jones"
"You have a spot fire to the north of your line about a quarter mile below Gobbler's Knob."	"Ten-one Ten-nine."
"Ten-two (now)?"	"Ten-two."
"You have a spot fire to the north of your line about a quarter mile below Gobbler's Knob."	"Ten-four. Jones."
"Sector A."	

## CHECK LIST

Put a check in the box for each "yes" answer.

<i>PART A</i>	<i>PART B</i>
<input type="checkbox"/> "Jones" or "Sector A" omitted or in reverse order? <input type="checkbox"/> Unneeded words?	<input type="checkbox"/> "Jones" omitted? <input type="checkbox"/> Unneeded words?
<input type="checkbox"/> Unneeded words?	<input type="checkbox"/> Codes omitted or incorrectly used?
<input type="checkbox"/> Code omitted or incorrect code used? <input type="checkbox"/> Unneeded words?	<input type="checkbox"/> Code omitted or incorrect code? <input type="checkbox"/> Unneeded words?
<input type="checkbox"/> Unneeded words?	<input type="checkbox"/> Code omitted or incorrect code? <input type="checkbox"/> Incorrect sign-off?
<input type="checkbox"/> Incorrect sign-off?	
Number of errors for A _____	Number of errors for B _____

For Monitor's Use  
When Needed

Monitor's Comments:

For Monitor's Use  
When Needed

Monitor's Comments:

**IMPORTANT**

When you have completed *all the pages to this one*, you have also finished these Answer Pages.

**TURN TO PAGE 179 AND CONTINUE.**

## ANSWER PAGES

(Pages 153 - 178)

Your answers may not always be word for word the same as those here, but they should express the same ideas. The words in parentheses following some of the answers are *not* parts of the answers. They are explanations to help you understand why the answers given are correct.



### ANSWERS TO PAGE 10

1. Base station
2. Mobile
3. Portable

### ANSWERS TO PAGE 11 (TEST)

1. Two
2. One and two
3. One
4. Two
5. One
6. One "chuh" sound is heard.
7. Two "chuh" sounds are heard at the end of each transmission.
8. Two
9. One
10. Channel 1 or channel 2
11. Only when the transmission is so bad that the receiver cannot hear the "chuh" sound.
12. Releasing the "push to talk" button
13. Those on the same frequency, the same net
14. After the *first* "chuh" sound

#### ANSWERS TO PAGE 14

1. Channel 1 (or A) and channel 2 (or B)
2. 1
3. 2
4. 2; 1
5. When the person you want to contact is on the other side of a barrier, a mountain or hill, through which the radio waves cannot pass.
6. 2
7. 1
8. To transmit a message through a repeater.
9. 1

#### ANSWERS TO PAGE 16

1. A "chuh" sound is heard at the end of the transmission.
2. One "chuh" sound, answer on channel 1.  
Two "chuh" sounds, answer on channel 2.
3. No. Because the repeater relays it on channel 1.
4. No. (The radio receives ch. 1 - even when the selector is turned to channel 2.)
5. 1
6. No (Unless the radio is a *repeater*.)
7. Yes
8. 2; 1
9. Was not; 1
10. Was; 2

## ANSWERS TO PAGE 18

1. Two
2. One and two
3. One
4. Two
5. One
6. One “chuh” sound is heard.
7. Two “chuh” sounds are heard at the end of each transmission.
8. Two
9. One
10. Channel 1 or channel 2
11. Only when the transmission is so bad that the receiving party cannot hear the “chuh” sound.
12. Releasing the “push-to-talk” button
13. Those on the same frequency, the same net
14. After the *first* “chuh” sound

ANSWERS TO PAGES 20 and 21 (TEST)

1.
  - (1) Screw on the antenna.
  - (2) Remove the mike, and turn it on.
  - (3) Turn the squelch to maximum noise.
  - (4) Adjust volume.
  - (5) Turn squelch knob until background noise is just gone.
  - (6) Select transmit channel.
2.
  - (1) Completely raise the antenna.
  - (2) Turn on.
  - (3) Turn squelch to maximum noise.
  - (4) Adjust volume.
  - (5) Turn squelch knob until background noise is just gone.
  - (6) Select transmit channel.
3.
  - (1) Turn on the ignition.
  - (2) Flip switch to *on* position.
  - (3) Turn squelch to maximum noise.
  - (4) Adjust volume.
  - (5) Turn squelch knob until background noise is just gone.
  - (6) Flip transmit channel selector switch to channel 1 or 2.
4. Listen for traffic and wait until air is clear.
5. At an angle to the mouth, about 1 to 2 inches from the mouth.
6. Push the push-to-talk button.

(continued on next page)

ANSWERS TO PAGES 20 and 21 (Continued)

7. Release the push-to-talk button.
8. Channel 2
9. Channel 1
10. Two “chuh” sounds are heard at the end of each transmission.
11. Channel 1
12. 2; 1
13. No
14. Only when the transmission is too poor for the “chuh” sound to be heard.
15. Replace the portable mike face up. For the others, just leave them turned on.
16. During normal use and when stored.
17. Take it off and put it in the carrying bag. For a personal portable, lower the antenna.

## ANSWERS TO PAGE 26

1. Screw on the antenna.
2. Completely raise the antenna.
3. Turn on the ignition (or start the car).
4. Remove the mike and push the on switch down.
5. Turn the switch or knob to the on position.
6. Turn squelch to maximum.
7. Adjust the squelch control toward the “noisy” direction.
8. Adjust volume.
9. Turn squelch knob until squelch is just gone.
10. Select the transmit channel.

## ANSWERS TO PAGES 28 and 29

1.
  - (1) Screw on the antenna.
  - (2) Turn on by removing the mike and pushing the on switch down.
  - (3) Turn squelch to maximum noise.
  - (4) Adjust volume (with volume knob).
  - (5) Turn squelch knob until background noise just disappears.
  - (6) Turn transmit channel selector knob to channel 1 or 2.
2.
  - (1) Completely raise the antenna.
  - (2) Turn on.
  - (3) Turn squelch to maximum noise.
  - (4) Adjust volume (off - on knob is used for volume).
  - (5) Turn squelch knob until background noise just disappears.
  - (6) Turn transmit channel selector knob to channel 1 or 2.
3.
  - (1) Turn on the ignition.
  - (2) Flip switch to *on* position.
  - (3) Turn squelch to maximum noise.
  - (4) Adjust volume.
  - (5) Turn squelch knob until background noise just disappears.
  - (6) Flip transmit channel selector switch to channel 1 or 2.
4. Listen, to be sure the air is clear.
5. Push the push-to-talk button.
6. At an angle to the mouth, about 1 to 2 inches from the mouth.
7. Release the push-to-talk button.

ANSWERS TO PAGES 32 and 33

1.
  - (1) Screw on the antenna.
  - (2) Remove the mike, and turn it on.
  - (3) Turn the squelch to maximum noise.
  - (4) Adjust volume.
  - (5) Turn squelch knob until background noise is just gone.
  - (6) Select transmit channel.
2.
  - (1) Completely raise the antenna.
  - (2) Turn on.
  - (3) Turn squelch to maximum noise.
  - (4) Adjust volume.
  - (5) Turn squelch knob until background noise is just gone.
  - (6) Select transmit channel.
3.
  - (1) Turn on the ignition.
  - (2) Flip switch to *on* position.
  - (3) Turn squelch to maximum noise.
  - (4) Adjust volume.
  - (5) Turn squelch knob until background noise is just gone.
  - (6) Flip transmit channel selector switch to channel 1 or 2.
4. Listen for traffic and wait until air is clear.
5. At an angle to the mouth, about 1 to 2 inches from the mouth.
6. Push the push-to-talk button.

(Continued on next page)



ANSWERS TO PAGES 32 and 33 (continued)

7. Release the push-to-talk button.
8. Channel 2
9. Channel 1
10. Two “chuh” sounds are heard at the end of each transmission.
11. Channel 1
12. 2; 1
13. No
14. Only when the transmission is too poor for the “chuh” sound to be heard.
15. Replace the portable mike face up. For the others, just leave them turned on.
16. During normal use and when stored.
17. Take it off and put it in the carrying bag. For a personal portable, lower the antenna.

## ANSWERS TO PAGE 36

1. Opinion, not fact
2. The radio is for official use only.
3. Profane language
4. Unnecessary words and sounds - not brief
5. Unclear; Please is an unnecessary word.
6. Unplanned, not to the point, not brief, unnecessary words.

## ANSWERS TO PAGES 48 and 49

In this order:

10-5  
10-6  
10-7  
10-8  
10-9  
10-1  
10-2  
10-3  
10-4

## ANSWERS TO PAGES 50 and 51

Your answers should be in this *order*:

10-9, 10-1, 10-3, 10-2, 10-5, 10-6, 10-7, 10-8, 10-4

## ANSWERS TO PAGES 52 and 53

<i>Code Number</i>	<i>Answers</i>
10-1	— — — — Receiving poorly or can't hear
10-9	— — — — Repeat beginning with _____.
10-7	— — — — Out of service or Radio turned off
10-8	— — — — In service or Radio turned on
10-2	— — — — Receiving well or Can hear fine now
10-5	— — — — Verbal repeat to third person
10-6	— — — — Stand by
10-3	— — — — Stop transmitting
10-4	— — — — OK or Acknowledgment

Your answers need not be in exactly these words but must mean the same as these.

## ANSWERS TO PAGE 54

Your answers should be in this order:

10-9, 10-1, 10-2, 10-4, 10-5, 10-6, 10-8, 10-7, 10-3

## ANSWERS TO PAGE 56

- 10-1        Receiving poorly
- 10-2        Receiving well
- 10-3        Stop transmitting
- 10-4        OK or acknowledgment
- 10-5        Verbal repeat to 3rd person
- 10-6        Stand by
- 10-7        Out of service (or radio turned off)
- 10-8        In service (or radio turned on)
- 10-9        Repeat beginning with \_\_\_\_\_.

As usual, your answers need not be in these exact words but they must mean the same.

## ANSWERS TO PAGES 62 and 63

Your answers should be in this order:

10-25, 10-13, 10-19, 10-20, 10-22, 10-11, 10-10

## ANSWERS TO PAGE 64

<i>Code</i>	<i>Message</i>
10-11 — — — — —	Transmitting too rapidly, talking too fast, or slow up.
10-10 — — — — —	Out of service at home, subject to call.
10-22 — — — — —	Disregard last message.
10-20 — — — — —	What is your location?
10-19 — — — — —	Return to your station or am returning.
10-25 — — — — —	Do you have contact with _____?
10-13 — — — — —	Weather

## ANSWERS TO PAGES 66 and 67

Your answers should be in this order:

10-5, 10-8, 10-9, 10-1, 10-2, 10-4, 10-7, 10-10

10-20, 10-25, 10-6, 10-19, 10-3, 10-13, 10-11, 10-22

## ANSWERS TO PAGE 70

Your answers should be in this order:

10-39, 10-36, 10-11, 10-5, 10-33, 10-25, 10-40

## ANSWERS TO PAGE 71

- 10-40 - - - - Is \_\_\_\_\_ available for phone call?
- 10-39 - - - - Can \_\_\_\_\_ come to the radio?
- 10-10 - - - - Out of service at home, subject to call.
- 10-5 - - - - Verbal repeat to third person.
- 10-8 - - - - In service, radio turned on.
- 10-33 - - - - Emergency traffic at this station.
- 10-36 - - - - Correct time
- 10-9 - - - - Repeat beginning with \_\_\_\_\_ .
- 10-7 - - - - Out of service, radio turned off.
- 10-3 - - - - Stop transmitting.
- 10-25 - - - - Do you have contact with \_\_\_\_\_ ?

## ANSWERS TO PAGE 72

Your answers should be in this order:

10-9, 10-8, 10-5, 10-20, 10-39, 10-40, 10-10, 10-7, 10-33, 10-36

## ANSWERS TO PAGE 75

Your answers should be in this order:

10-43, 10-9, 10-49, 10-19, 10-5, 10-44, 10-36

#### ANSWERS TO PAGES 76 and 77

- 10-5 - - - - Verbal repeat to third person.
- 10-9 - - - - Repeat beginning with \_\_\_\_\_ .
- 10-33 - - - - Emergency traffic at this station.
- 10-39 - - - - Can \_\_\_\_\_ come to the radio?
- 10-49 - - - - Proceed to \_\_\_\_\_ .
- 10-36 - - - - Correct time
- 10-43 - - - - Turn on repeater.
- 10-44 - - - - Turn off repeater.
- 10-7 - - - - Out of service  
(radio turned off).
- 10-8 - - - - In service  
(radio turned on).
- 10-40 - - - - Is \_\_\_\_\_ available for a phone call?
- 10-3 - - - - Stop transmitting.
- 10-25 - - - - Do you have contact with \_\_\_\_\_ ?

#### ANSWERS TO PAGES 82 and 83

- 1. (given in manual)
- 2. 10-2
- 3. 10-5 Smith
- 4. 10-39 Joe Brown?
- 5. 10-3, 10-6
- 6. Jones, 10-19
- 7. 10-36 ?
- 8. 10-13 tomorrow ?
- 9. 10-10
- 10. 10-86
- 11. 10-71
- 12. 10-97
- 13. 10-72

## ANSWERS TO PAGE 91

1. (given in manual)
2. one - three deer
3. November twenty five
4. one thousand
5. one-zero-two-four
6. code no. ten-twenty
7. code no. ten-forty four
8. three thousand trees
9. Car eight-six
10. Car one-zero-zero
11. thirty minutes

## ANSWERS TO PAGE 92

1. ten-four
2. ten-forty
3. Car one-zero
4. two-thousand dollars
5. two-zero-zero dollars
6. two-zero-zero-one dollars
7. three-zero fire extinguishers
8. one thousand men
9. one-zero-five-zero men
10. October fifteen
11. one-five trees
12. one-zero-zero trees
13. Car one-two-four
14. five thousand trees
15. five-zero-zero cars
16. fifty minutes
17. five



# ANSWERS TO PAGE 99

3:30 PM	....	1530	12:45 PM	....	1245 (45 min. past noon)
1 PM	....	1300	11:00 PM	....	2300
12 midnight	....	2400	4 AM	....	0400
12 noon	....	1200	8 PM	....	2000
7 PM	....	1900	8 AM	....	0800
7 AM	....	0700	11 AM	....	1100
7:54 AM	....	0754	12:15 AM	....	0015 (15 min. past midnight)

# ANSWERS TO PAGE 100

0050	....	(given in manual)	1230	....	12:30 PM
2400	....	12 midnight	1800	....	6 PM
1200	....	12 noon	1920	....	7:20 PM
1450	....	2:50 PM	2300	....	11 PM
1600	....	4 PM	2000	....	8 PM
1100	....	11 AM	2200	....	10 PM
1300	....	1 PM	1700	....	5 PM
1500	....	3 PM	2135	....	9:35 PM
0130	....	1:30 AM	0800	....	8 AM
0900	....	9 AM	0600	....	6 AM
1000	....	10 AM	0740	....	7:40 AM
0200	....	2 AM	0400	....	4 AM
0201	....	2:01 AM	1441	....	2:41 PM
0315	....	3:15 AM	0500	....	5 AM
1145	....	11:45 AM	1313	....	1:13 PM

# ANSWERS TO PAGE 101

12:15 PM	-----	1215	12:59 AM	-----	0059
1 PM	-----	1300	12 noon	-----	1200
3 PM	-----	1500	1 PM	-----	1300
5 PM	-----	1700	5 PM	-----	1700
7:30 PM	-----	1930	8 PM	-----	2000
9 PM	-----	2100	10:10 PM	-----	2210
11 PM	-----	2300	9 PM	-----	2100
2 PM	-----	1400	7 PM	-----	1900
4 PM	-----	1600	2 PM	-----	1400
6 PM	-----	1800	3:45 PM	-----	1545
8 PM	-----	2000	6:50 PM	-----	1850
10 PM	-----	2200	11 PM	-----	2300
12 midnight	-----	2400	4 PM	-----	1600
12:01 AM	-----	0001	4:16 PM	-----	1616

(One min. after midnight)

# ANSWERS TO PAGE 102

1200	-----	12 noon	2000	-----	8 PM
1400	-----	2 PM	1200	-----	12 noon
1600	-----	4 PM	2400	-----	12 midnight
1800	-----	6 PM	0600	-----	6 AM
2000	-----	8 PM	1000	-----	10 AM
2200	-----	10 PM	1100	-----	11 AM
2400	-----	12 midnight	1800	-----	6 PM
1100	-----	11 AM	1300	-----	1 PM
1300	-----	1 PM	1700	-----	5 PM
1500	-----	3 PM	1500	-----	3 PM
1700	-----	5 PM	2100	-----	9 PM
1900	-----	7 PM	2300	-----	11 PM
2100	-----	9 PM	0100	-----	1 AM
2300	-----	11 PM	2200	-----	10 PM
0100	-----	1 AM	1900	-----	7 PM
0300	-----	3 AM	1600	-----	4 PM
0500	-----	5 AM	1400	-----	2 PM
0200	-----	2 AM	0900	-----	9 AM
0400	-----	4 AM	2100	-----	9 PM
1000	-----	10 AM	1700	-----	5 PM
1001	----	10:01 AM	0059	----	12:59 AM
0001	----	12:01 AM	1259	----	12:59 PM
0010	----	12:10 AM	0100	----	1 AM

## ANSWERS TO PAGE 106

1. Affirmative
2. Negative
3. After 30 seconds, say "break", wait for acknowledgment of reception, then pause for 10 seconds.  
To receive acknowledgment of reception and to allow for emergency traffic, if needed.
4. No
5. Answer, then stand by until the transmission continues.
6. Write it.
7. Write it.

## ANSWERS TO PAGES 108 and 109

1. 10-36, 1600 (said as: ten-thirty six, sixteen hundred)
2. Affirmative
3. We need part number zero-zero-two-T, as in Tom (or other common word beginning with t).
4. Negative
5. Break
6. I will be 10-10 at 2100. (said as: I will be ten-ten at twenty one hundred)
7. I count *four-seven* horses in the valley.
8. 10-20 (ten-twenty), *three-eight* miles south of Crest Hill.
9. 10-72
10. 10-36, oh-oh-oh-one.
11. one-zero men ten-ninety seven.

## ANSWERS TO PAGE 111

The diagram illustrates the experimental design with two participants: *You* and *Control*. *You* is shown on the left, and *Control* is on the right. *You* sends a message to *Control*, and *Control* sends a message back to *You*.

*You* sends: "Control, Car four-seven, ten-eighty six"


*Control* sends: "Negative, four-seven, KME two-five"

*You* receives: "Four-seven"

If your answer differs much from this, read the NOTE on page 111 again.

## ANSWERS TO PAGE 112

1. (a) "Car eight-two, Car four-seven."  
(b) "Car eight-two"
2. "Ten-four, Car four-seven."
3. *You*

<i>You</i>		<i>Rocky Peak</i>	
“Rocky Peak, Control, ten-forty three.”		“Rocky Peak, ten-forty three.”	

(The man at Rocky Peak may repeat your 10-43 request. Then you would turn to channel 2 and call the person you need.)

- 4.
- | <i>You</i>                                |   | <i>Rocky Peak</i>             |
|---|---|-------------------------------|
| "Rocky Peak, Control,<br>ten-forty four." | → | "Rocky Peak, ten-forty four." |

Other acceptable messages under those circumstances are:

“Rocky Peak, Control, 10-44”  $\longrightarrow$  “10-44, Rocky Peak”  
or

**“Rocky Peak, Control, 10-44” → “Rocky Peak”**

## ANSWERS TO PAGE 114

You should have written these numbers in this *order*:

5  
2  
1  
4  
3

## ANSWERS TO PAGE 115

1. "Mayday"
2. Name, location and description of situation
3. "Fire Flash"
4. Yes
5. No (except under unusual circumstances)
6. Yes (Another fire is being reported for the first time.)
7. Dispatching the first crew to a new fire.

ANSWERS TO FINAL QUESTIONS, PAGES 118-124

1. Portables
2. Personal Portable
3. Mobile
4. Base station
5. 1 or 2
6. 1
7. 2
8. 1
9. (1) Attach the antenna.  
(2) Remove mike and turn on.  
(3) Turn squelch to maximum noise.  
(4) Adjust volume to acceptable level.  
(5) Adjust squelch to just no noise.  
(6) Select channel.
10. (1) Completely raise antenna.  
(2) Turn on.  
(3) Turn squelch to maximum noise.  
(4) Adjust volume to acceptable level (off-on knob also for volume).  
(5) Adjust squelch to just no noise.  
(6) Select channel.
11. (1) Turn on ignition.  
(2) Flip switch to on position.  
(3) Turn squelch to maximum noise.  
(4) Adjust volume to acceptable level.  
(5) Adjust squelch to just no noise.  
(6) Select channel.
12. Replace the mike face up in the holder bracket.
13. Leave them turned on.
14. Listen for traffic.
15. Press the push-to-talk button.
16. One to two inches away, at an angle to the mouth.
17. Opinions should not be given, unless asked for.
18. Not official use of radio
19. Profane language
20. Unnecessary words. Do not say "Please" or "I'd appreciate" on the radio.

ANSWERS TO FINAL QUESTIONS, PAGES 118-124

(continued)

21. Speed not constant as usual conversation should be.
22. Unnecessary words (should have just said 10-10)
23. 5  
3  
2  
4  
1
24. "Fire Flash"
25. "Mayday"
26. (a) November one  
(b) two-two-zero cars  
(c) three thousand trees  
(d) ten-forty four  
(e) Car eight-one  
(f) K M B two-five  
(g) one-zero-zero trees  
(h) thirty minutes
27. Write it.
28. The designation of the person (or place) you are calling, then your designation.
29. With your designation (number of car, name of station, etc.)
30. After 30 seconds, say "break", wait for acknowledgment of reception, then pause for 10 seconds.
31. To receive acknowledgment of reception, and to allow for emergency traffic, if any.
32. One "chuh" sound is heard at the end of each transmission when the repeater is *not* used. Two "chuh" sounds are heard when the repeater *is* used.
33. Two
34. Only when the transmission is too poor for the "chuh" sounds to be heard.
35. Affirmative
36. Negative

ANSWERS TO FINAL QUESTIONS, PAGES 118-124

(continued)

37.			10 AM	1000
	1 AM	0100	6 PM	1800
	2 PM	1400	11 AM	1100
	12 noon	1200	11 PM	2300
	1 PM	1300	5 PM	1700
	9 PM	2100	12:15 AM	0015
	4 AM	0400	1:20 AM	0120
	7 PM	1900	10:30 PM	2230
	12 midnight	2400	12:15 PM	1215
	3 PM	1500	4:45 PM	1645
	8 PM	2000	12:01 AM	0001
	8 AM	0800	12:01 PM	1201
	4 PM	1600	10:10 AM	1010
	10 PM	2200	4:16 PM	1616



ANSWERS TO FINAL QUESTIONS, PAGES 118-124

(continued)

38. 10-1 Receiving poorly, or can't hear  
 10-2 Receiving well, or can hear now  
 10-3 Stop transmitting  
 10-4 OK or acknowledgment  
 10-5 Verbal repeat to 3rd person  
 10-6 Stand by  
 10-7 Out of service (radio turned off)  
 10-8 In service (radio on)  
 10-9 Repeat beginning with \_\_\_\_\_.  
 10-10 Out of service at home - subject to call  
 10-11 Transmitting too rapidly (slow up)  
 10-13 Weather  
 10-19 Return to station, or am returning  
 10-20 What is your location? or My location is \_\_\_\_\_.  
 10-22 Disregard last message  
 10-25 Do you have contact with \_\_\_\_\_ ?  
 10-33 Emergency traffic at this station  
 10-36 Correct time  
 10-39 Can \_\_\_\_\_ come to the radio?  
 10-40 Advise if \_\_\_\_\_ available for phone call  
 10-43 Turn on radio repeater  
 10-44 Turn off radio repeater  
 10-49 Proceed to \_\_\_\_\_.  
 10-71 Advise nature of fire  
 10-72 Report progress on fire  
 10-86 Routine check in  
 10-97 Arrived at scene



Unless you plan to work for at least another 45 minutes or more, stop here.  
Begin again at this point tomorrow (or as soon thereafter as possible).

This page contains instructions and questions which pertain to a special *tape recording* of actual radio transmissions.

- If you do *not* have the tape which accompanies this course, or if you do not have access to a tape recorder skip this page and the next and go on to page 181 now.
- If you *do* have the tape and facilities for hearing it, continue with this page.

The first time you hear the tape you may have difficulty understanding some of the messages. Listen carefully to hear as much as you can. Listen particularly for 10-code signals. On the line below, write the 10-code signals, as you hear them.

Now Play The Tape.

(Fill in with the 10-code signals, as you hear them.)

The answers to the questions below can be found by listening to the tape. So that you will know what to listen for, read the questions now, before you play the tape again.

This time, you may stop the recorder, back it up, and hear any parts as many times as you like. The questions are in the same order in which the answers will be heard. You may want to stop the recorder to write each answer.

Now Play The Tape Again.

1. Where was the fire? \_\_\_\_\_
2. What 10-code signal did unit 120 use in response to the dispatch instruction? \_\_\_\_\_
3. The dispatcher, Del Rosa, asked the lookout, San Sevaire, for information about the nature of the fire. What code signal should he have used to request that information? \_\_\_\_\_
4. What time did unit 106 arrive at the scene? \_\_\_\_\_

Listen for the 10-43 and 10-44 code signals when channel 2 is used. Listen carefully for the "chuh" sounds at the ends of the transmissions through the repeater.

5. As heard on this tape, the local method used to signal a new fire is 3 beeps. What is the location of the *second* fire? \_\_\_\_\_
6. Why do you suppose unit 202 was told to 10-22? \_\_\_\_\_
7. When both fires appeared to be under control what did unit 161 do? \_\_\_\_\_
8. What cause was given for the second fire? \_\_\_\_\_

Compare your answers with those given on the next page.

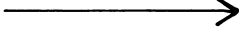
## ANSWERS TO QUESTIONS ON PAGE 179

Check your answers by these:

1. Flynn Ranch in Lytle Creek
2. 10-49
3. 10-71
4. 1622 or 4:22 PM (9 - 52, heard after the time is the 9 code equivalent of 10-71.)
5. In Little Bear Creek on Alder Creek Road
6. So that he could help with the new fire on his own district.
7. He went home. (You should have heard him say 10-10.)
8. Playing with matches

The following pages are a self-test. This is the same test you took at the beginning. The difference between your score then and your score this time will show how much you have learned from this course. Do *not* look back at pages in this manual while you are taking the test. You will be able to score the test yourself, when you finish.

When you are ready, begin the test —————→

Take this test in the same way as you did the  
Pre-test at the beginning 

## POST-TEST

- Use your pencil to mark the letter, A, B, C, or D, beside the *best* answer.  
Mark only *one* answer for each item.

1. Forest Service radios, as used by personnel in the field, *transmit* on:
  - A. Channel 1 only
  - B. Channel 2 only
  - C. Channels 1 and 2
  - D. Any channel
  
2. Forest Service radios, as used by personnel in the field, *receive*:
  - A. Channel 1 only
  - B. Channel 2 only
  - C. Channels 1 and 2
  - D. Any channel
  
3. This is the correct way to hold the radio mike when transmitting:
  - A. As close to your mouth as possible
  - B. At an angle to your mouth, one to two inches away
  - C. Straight in front of your mouth, two to three inches away
  - D. Just below your chin, about one inch away, tilted up to your mouth

4. Which is the most important in terms of priority for radio use?
- A. Dispatching the first crew to a fire
  - B. Requesting additional men and equipment for a fire
  - C. First report of a new fire
  - D. Injury or need for medical attention
5. When you are receiving a message, how can you tell when the sender is through talking, or ready for you to answer?
- A. The sender should say "over" or "clear".
  - B. The sender should give the call letters of the radio net.
  - C. You will hear (what can best be described as) a "chuh" sound.
  - D. You will hear a click as he releases his push-to-talk button.
6. How can you tell (by listening) when a message is coming through a repeater?
- A. You will hear two clicking sounds.
  - B. You will hear two "chuh" sounds.
  - C. The sender will give the 10-code signal meaning "repeater on".
  - D. You will hear a slight "echo" effect.
7. To prepare most *mobile* radio units for operation, the first thing to do is:
- A. Raise the antenna.
  - B. Attach the antenna.
  - C. Remove the mike.
  - D. Turn on the ignition.
8. When a single radio transmission lasts more than 30 seconds, you should:
- A. Stop transmitting every 30 seconds, say "Break", wait for acknowledgment of reception, then wait ten seconds before continuing.
  - B. Stop transmitting every 15 seconds, say "Break", and wait five seconds before continuing.
  - C. Say "10-2?" every 30 seconds, and wait for a reply.
  - D. Stop transmitting every 10 seconds, and wait for acknowledgment from the receiver before continuing.

9. "Six o'clock in the afternoon" should be said on the radio as:
- A. "Six PM"
  - B. "Oh-six hundred"
  - C. "Eighteen hundred"
  - D. "One-eight-oh-oh"
10. The 10-code signal, 10-1, means:
- A. OK or acknowledgment
  - B. Stop transmitting, or, I am going to pause
  - C. In service
  - D. Receiving poorly, or, can't hear well
11. The 10-code signal, 10-33, means:
- A. Emergency traffic at this station
  - B. Report progress on fire
  - C. Routine check in
  - D. Stand by
12. The 10-code signal, 10-71, means:
- A. Receiving poorly
  - B. Advise nature of fire
  - C. Report progress on fire
  - D. Transmitting too rapidly
13. The 10-code signal, 10-25, means:
- A. Do you have contact with \_\_\_\_\_?
  - B. Can \_\_\_\_\_ come to the radio?
  - C. What is your location?
  - D. Is \_\_\_\_\_ available for phone call?
14. A correct radio transmission of the phrase, "1000 trees", is:
- A. "One-zero-zero-zero trees"
  - B. "One thousand trees"
  - C. "Ten hundred trees"
  - D. All of the above are acceptable in radio transmission.



15. A correct radio transmission of the phrase, "243 cows", is:
- A. "Two hundred and forty three cows"
  - B. "Two hundred and four-three cows"
  - C. "Two-four-three cows"
  - D. "Two-forty three cows"
16. When first reporting a new fire, a radio message should include:
- A. "Mayday!"
  - B. "Fire flash"
  - C. "Clear for fire"
  - D. "Attention - all units - fire!"
17. Which of these radio messages is an example of the best request for weather and time information?
- A. "Ten-thirteen, please, and time"
  - B. "Ten-two, ten-eight"
  - C. "Ten-thirteen, ten-thirty six"
  - D. "Ten-thirteen, then, thirty six, please"
18. Mark the transmission below which best conveys this message, "I am returning to my station and will be out of service at home, subject to telephone call, at 9 o'clock tonight."
- A. "Returning to station, ten-ten, nine."
  - B. "Ten-ten at twenty one hundred."
  - C. "Ten-nineteen, twenty one hundred."
  - D. "Ten-nineteen, ten-ten at twenty one hundred."
19. Mark the transmission below which best conveys this message, "Can Jones be reached by telephone?"
- A. "Ten-forty Jones?"
  - B. "Ten-thirty nine Jones?"
  - C. "Advise if Jones is available for phone call."
  - D. "Ten-twenty Jones, please."

20. Mark the *most professional* radio message below:
- A. "Please tell the recreation staff man that Jones Creek Camp Ground has forty three full units, seventeen empty at this time."
  - B. "Advise the recreation staff man that Jones Creek Camp Ground has zero-four-three full units, zero-one-seven empty at this time."
  - C. "Ten-eight, Jones Creek Camp Ground, four-three full, one-seven empty. Ten-four."
  - D. "Advise the recreation staff man that Jones Creek Camp Ground has oh-four-three full units, oh-one-seven empty at this time. Acknowledge and over."
21. Car 43 is calling the Dispatcher for a routine check in. What might the man in Car 43 *best* say?
- A. "Car forty three calling Control. Ten-eighty six."
  - B. "Control, Car forty three – any messages?"
  - C. "Calling Control - this is Car four-three. Routine check."
  - D. "Control, Car four-three, ten-eighty six."
22. The Ranger at Red Rock Ranger Station has received and understood a message from the Dispatcher. He could best sign off in this way:
- A. "Ten-four, Red Rock."
  - B. "Ten-four, Red Rock. Over and out."
  - C. "Roger - over and out."
  - D. "Red Rock signing off."
23. The Dispatcher (Control) wants the Lookout at Rocky Peak to turn on the repeater. Which transmission best conveys the request?
- A. "Control calling Rocky Peak. Activate repeater."
  - B. "Rocky Peak, Control. Ten-forty three."
  - C. "Rocky Peak, ten-forty three, Control."
  - D. "Control calling Rocky Peak. Ten-four-three."

24. A Ranger is ordering part no. 1470 for a new machine. That order could best be transmitted as:
- A. "Please deliver part number one-four-seven-zero."
  - B. "Request immediate attention to order of part number one-four-seven-zero."
  - C. "Send part number one-four-seven-zero."
  - D. "Please send part number fourteen hundred, seventy. Thanks."
25. One group of words below is representative of professional Forest Service radio word use. Which?
- A. "Roger", "Over", "All clear"
  - B. "A - OK", "Green", "All go"
  - C. "Flash", "Sign off", "Unit break"
  - D. "Affirmative", "Negative", "Break"

On the back of this page is a “KEY” to the test. You may tear out this page and use it to score the Pre-test which you took at the beginning and the (same) Post-test which you have just completed.

When you have scored your tests you should *discuss this course with your work supervisor*, if possible.

TEAR OUT

for easier handling

KEY TO PRE and POST TESTS

ANSWERS

1. C
2. A
3. B
4. D
5. C
6. B
7. D
8. A
9. C
10. D
11. A
12. B
13. A
14. B
15. C
16. B
17. C
18. D
19. A
20. B
21. D
22. A
23. B
24. C
25. D

## CONGRATULATIONS!

You have completed your course in EFFECTIVE RADIO USE. To perform effectively, as a professional Forest Service Radio Operator - remember to *use* what you have learned.

Under the conditions of a NEW Forest Service POLICY, radio transmissions will be MONITORED! Keep this manual as a permanent reference and review it periodically.

If you have recording and playback facilities, ask your supervisor if you may practice "broadcasting" and listen to your own transmissions.

## NOTE

Mention of a trade product in this manual does not constitute an endorsement.







